

## A synopsis of the genus *Telebasis* (Odonata: Coenagrionidae)

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### ABSTRACT

In this synopsis all 50 species of the primarily neotropical genus *Telebasis* are keyed, diagnosed, and illustrated. *Helveciagrion* is considered a junior subjective synonym of *Telebasis*, *T. coccinata* a junior subjective synonym of *T. coccinea*, and *T. limoncocha* a junior subjective synonym of *T. griffinii*. Six new species from South America are described: *T. carvalhoi* (holotype ♂: Brazil, Pará State, Floresta Nacional de Carajás, Parauapebas, S11D-C, 6°02'59"S, 49°53'24"W, ix 2005, leg. N. Ferreira Jr., in UFRJ); *T. corbeti* (holotype ♂: Peru: Madre De Dios Department, Tambopata-Candamo Reserved Zone, Camp 3, Collpa, Río Tambopata west bank, 13°08'31"S, 69°36'46"W, 17 ix 1992, leg. M. Butt, in BNHM); *T. farcimentum* (holotype ♂: Colombia: Valle del Cauca Department, Cali, 3°26'14"N, 76°31'21"W, 01 viii 1972, leg. N.B. Stiles, in FSCA); *T. leptocyclia* (holotype ♂: Brazil: Rondônia State, Abuna, 9°42'S, 65°23'W, 112 m, 09 iii 1922, leg. J.H. Williamson, J.W. Strohm, in UMMZ); *T. levis* (holotype ♂: Guatemala, El Petén Department, Uaxactun, 03 v 1931, leg. A. Murie, in UMMZ); and *T. williamsoni* (holotype ♂: Colombia: Magdalena Department, El Banco, 9°02'50"N, 73°58'41"W, 46 m, 25 i 1917, leg. J.H. Williamson, E.B. Williamson, in UMMZ).

### RESUMEN

En esta sinopsis del género mayormente neotropical *Telebasis* se proveen claves, diagnosis e ilustraciones de sus 50 especies. *Helveciagrion* se considera un sinónimo junior subjetivo de *Telebasis*, *T. coccinata* un sinónimo junior subjetivo de *T. coccinea* y *T. limoncocha* un sinónimo junior subjetivo de *T. griffinii*. Seis nuevas especies de América del Sur son descriptas: *T. carvalhoi* (holotipo ♂: Brasil, Estado de Pará, Floresta Nacional de Carajás, Parauapebas, S11D-C, 6°02'59" S, 49°53'24" W, ix 2005, leg. N. Ferreira Jr., en UFRJ); *T. corbeti* (holotipo ♂: Perú: Departamento de Madre De Dios, Tambopata-Zona Reservada Candamo, Campamento 3, Collpa, banda oeste del Río Tambopata, 13°08'31"S, 69°36'46"W, 17 ix 1992, leg. M. Butt, en BNHM); *T. farcimentum* (holotipo ♂: Colombia: Departamento de Valle del Cauca,

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## INTRODUCTION

Recognition and identification of genera of neotropical Odonata is difficult because many generic definitions are still vague. This is probably best exemplified in the large family Coenagrionidae. With 47 New World genera and 427 described species, it is often easier to identify individuals to species rather than to genus. Part of the problem stems from the continuing placement of newly described species in previously described genera, enlarging generic concepts and making it difficult to precisely define such genera. *Telebasis* and *Helveciagrion* Machado, 1980 represent such examples.

Bick & Bick (1995, 1996) acknowledged the difficulty in precisely defining the large genus *Telebasis*; they provided a nomenclatorial history of the genus as well as keys for males (1995) and females (1996). The simple outline illustrations provided by Bick & Bick (1995, 1996) do not allow for confident association of specimens with unknown material in the hand. Five more species (Garrison 1997; Daigle 2002a, b; Tennessen 2002) have been described since the reviews by Bick & Bick (1995, 1996). Lencioni (2006) provided a listing accompanied by illustrations (most of these from RWG) for all species then known from Brazil. Heckman (2008) provided a key to all South American species but his work was based solely on previous literature; his keys are long, narrative, repeat previous errors, and do not allow for confident recognition of unknown taxa.

*Helveciagrion* was erected by Machado (1980) to include *H. vulcanoae*, and was characterized by its overall blue coloration, the occasional presence of postocular spots, and approximate condition of male cerci. Machado (1980) also transferred *Acanthagrion chirihuanum* Calvert, 1909 and *Skiallagma simulacrum* Calvert, 1909 to his new genus and distinguished *Helveciagrion* from *Homeoura chelifera* (Selys,

1876) and from the poorly known *Skiallagma baueri* Förster, 1906, but he did not compare *Helveciagrion* to *Telebasis*. Bick & Bick (1995) acknowledged the similarity of some species of *Telebasis* to *Helveciagrion* but decided to keep the two genera separate pending further studies. Costa & Santos (2001) compared the monotypic *Tigriagrion aurantinigrum* Calvert, 1909 to *Telebasis* and provided a couplet to separate *Telebasis* from *Helveciagrion*. However, the characters proposed by Machado (1980) and Costa & Santos (2001) to differentiate *Helveciagrion* from *Telebasis* do not hold true, as exemplified by my comparison of a paratype of *Telebasis lacustris* Jurzitza & Ráčenis, 1984 with *Helveciagrion simulacrum* which showed that both were synonyms (Bick & Bick 1995; Heidemann 1999; based on pers. comm. from RWG).

The purpose of this paper is to provide a new and corrected generic diagnosis for *Telebasis*, synonymize *Helveciagrion*, describe five new species, and provide illustrated keys to both sexes and updated distribution data for all described species.

## MATERIAL AND METHODS

Each species account includes a synonymy, specimens examined, description for new species, diagnosis, remarks if necessary, distribution, and biology data when available. Synonymies include only references that incorporate original descriptions, name changes, misidentifications or supplementary and/or significant data. Nomenclature follows Riek & Kukalová-Peck (1984) for wing venation, Westfall & May (2006) for body morphology, Pessacq (2008) for additional head terminology, and De Marmels (2002) for various lobes and processes of genital ligula. All measurements are given in mm; total length and length of abdomen include cerci. All drawings were made with the aid of a camera lucida coupled to a Nikon SMZ1500 stereoscope and are not to scale. Wings were scanned from specimens. Maps represent distribution records from collections and reliable literature records, and were created electronically from the Digital Chart of the World (1:1,000,000) using ArcView 9.1. Elevation data and longitude/latitude coordinates were culled from the Global Gazetteer website (<<http://www.fallingrain.com/world/>>); all locality data are available from the author. Distribution records for species occurring in the USA were taken from Abbott (2008). Full locality data are given only for material examined, and only a few records of *T. salva* from USA are provided since the species is well-known and widely distributed. In the keys, headings for species accounts, and dimensions, app: caudal appendages (cerci and paraprocts), lig: genital ligula ('penis'), pthx: prothorax, thx: synthorax, and abd: abdomen.

Acronyms for collections and collectors are as follows:

- ABMM — Angelo B.M. Machado collection, Belo Horizonte, Minas Gerais, Brazil
- ACR — Andrew C. Rehn collection, Sacramento, CA, USA
- BNHM — Natural History Museum, London, UK
- CBF — Colección Boliviana de Fauna, La Paz, Bolivia
- CC — Carl Cook collection, Center, KY, USA
- CM — Carnegie Museum of Natural History, Pittsburgh, PA, USA
- DP — David Pryce collection, Stirling, UK
- DRP — Dennis R. Paulson collection, Seattle, WA, USA
- FAL — Frederico A. A. Lencioni collection, São Paulo, Brazil



- FGS — Fred G. Sibley collection, Alpine, NY, USA  
 FSCA — Florida State Collection of Arthropods, Gainesville, FL, USA  
 GJ — Gerhard Jurzitza collection, Karlsruhe, Germany  
 IFML — Fundación e Instituto Miguel Lillo, Tucumán, Argentina  
 IORI — International Odonatological Research Institute, Gainesville, FL, USA  
 IRSN — Institut Royal des Sciences Naturelles de Belgique, Bruxelles, Belgium  
 JJD — Jerrell J. Daigle collection, Tallahassee, FL, USA  
 KJT — Kenneth J. Tennessen collection, Wautoma, WI, USA  
 MCZ — Museum of Comparative Zoology, Cambridge, MA, USA  
 MHNN — Muséum d'Histoire Naturelle, Neuchâtel, Switzerland  
 MIZA — Museo del Instituto de Zoología Agrícola "Francisco Fernández Yépez", Maracay, Venezuela  
 MIZT — Università di Torino, Torino, Italy  
 MLM — Michael L. May collection, New Brunswick, NJ, USA  
 MLP — Departamento Científico de Entomología, Museo de La Plata, Argentina  
 NHMW — Naturhistorisches Museum Wien, Vienna, Austria  
 NVE — Natalia von Ellenrieder collection, Salta, Argentina  
 OUMNH — Hope Entomological Collections, Oxford University Museum of Natural History, Oxford, UK  
 RMNH — Nationaal Natuurhistorisch Museum Naturalis, Leiden, The Netherlands  
 RWG — Rosser W. Garrison collection, Sacramento, CA, USA  
 SWD — Sidney W. Dunkle collection, Tucson, AZ, USA  
 SMF — Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt a. M., Germany  
 UASC — Museo de Historia Natural "Noel Kempff Mercado", Santa Cruz de la Sierra, Bolivia  
 UFRJ — Departamento de Entomologia, Universidade Federal do Rio de Janeiro, Brazil  
 UMMZ — University of Michigan, Museum of Zoology, Ann Arbor, MI, USA  
 USNM — National Museum of Natural History, Washington, D.C., USA  
 ZSM — Zoologischen Staatssammlung München, Munich, Germany

#### Diagnostic characters used in males

**Head:** Predominantly red or less often blue with varying epicranial black markings; pale or black coloration of rear of head (Figs 1c-f) is of prime importance in separating among clusters of species. Overall coloration of labrum, whether orange or red, blue, or black is diagnostic in discriminating among species groups.

**Thorax:** Shape and extent of mes- and metepimeral dark metallic stripes is often species-specific; however, patterns, especially in *Telebasis filiola* and its allies, can be variable. Mid-dorsal thoracic carina may be either pale, thus interrupting the continuous dark mid-dorsal thoracic stripe (e.g. Figs 4g, i, j, l), or entirely black (e.g. Figs 4c-e, h, k).

**Wings:** Usually hyaline, but in a few species color is flavescent to slightly amber.

**Abdomen:** After caudal appendages, the genital ligula offers the best diagnostic characters for species identification, such as: overall shape including relative width; relative length of flap-like inner fold in proportion to apical segment; shape of apical

segment, which can be shovel- or trowel-shaped, with (e.g. Figs 12g, j, m, o, p) or without (e.g. Figs 12d, e) various apical or lateral lobes. Caudal appendages: Shape and condition of male cercus and paraproct are so distinctive that nearly all species can be identified by comparison with their illustrations alone (Figs 16-25). Cercus is almost always pale and possesses a dark glabrous tooth of various shapes located most often ventro-apically. Its structure is best seen on medial view. A thick, blonde, medio-apical cluster of curved hairs often accompanies the cercus. Its presence may restrict complete views of the shape of the cercal tooth; I have showed this area of the cercus with and without these hairs for some species (Figs 16f; 17d, k, l; 19a, b). The ventral margin of cercus is often pale, trough-like, and it may be visible as a longitudinal seam when cercus is viewed laterally (e.g. Figs 20l, o, s). The paraproct is often an elongate, gently rounded, cup-like structure, but in some species it is pointed. Comparative lengths of cercus and paraproct are important in discriminating between some species pairs.

### Diagnostic characters used in females

They do not differ from males in terms of head and thoracic patterns, although dark areas on body are often more restricted compared to males. Pale colors are usually yellow or more ochraceous compared to orange or red areas in males.

**Thorax:** Presence (e.g. Figs 5d, e, g, n) or absence (e.g. Figs 5f, i, k) of prothoracic horns originating anteriorly at base of prothoracic posterior lobe is specifically diagnostic, except in *T. carmesina* where they may be minute (Fig. 5m) to well-developed (Fig. 5l). These horns can be strap-like to digitiform (e.g. Figs 5d, o-r) and may lie appressed (e.g. Figs 5d, e, o; 7m) or elevated (e.g. Figs 5r; 6f, l; 7e, l; 8f) above the prothoracic middle lobe. In species having approximate male cerci the anterior portion of female mesepisternum presents distinct post-interlaminal sinuses or pits (Figs 5h, i; 6a, b, m; 7f, h, o, q; 8c, d, g, h), similar to those of females of *Acanthagrion*. Poorly-defined depressions occur just behind the postero-distal margin of the mesostigmal plates of many other species.

### Keys

To ensure success in identifying material, males should be relaxed and cerci flexed so that their tips are not obscured by the paraprocts. The ligula can be teased from the genital fossa and flexed rendering visibility of all structures under high magnification, then cross-pinned after extrusion using small (0.10 mm) minuten pins on small balsa boards, and steeped in acetoned baths for several hours. Comparison of specimens to figures should facilitate identification. I provide two separate keys to males, one including color as well as morphology of caudal appendages supplemented by characters of genital ligula, and a second one based on coloration and morphology of genital ligula only, since workers may often need to identify males of *Telebasis* lacking caudal appendages. Caution should be used since the flexible apical segment of ligula can undergo post-mortem distortions, making it appear different from illustrations provided here. Although I may have underestimated morphological variability for some species due to limited material, I have examined at least one male and one female of every described species.

GENUS *Telebasis* Selys, 1865

*Telebasis* Selys, 1865: 376 (4 reprint).

[NOTE: *Telebasis* was introduced and briefly diagnosed without including any species.]

*Telebasis* Selys, 1868: 70 (5 reprint). Type species: *T. boucardi* Selys, 1868 (by monotypy).

[NOTE: various catalogs (Muttkowski 1910: 62; Davies 1981: 3; Davies & Tobin 1984: 95; Bridges 1994: III.50; Steinmann 1997: 358; Tsuda 2000: 50) cite *Agrion salvum* as type species based on subsequent type designation by Kirby (1890: 155), however *Telebasis* was introduced by Selys with only one species, *T. boucardi* which he later (Selys 1876) declared a junior synonym of *A. salvum* Hagen, 1861.]

*Erythrargrion* Selys, 1876: 955 (245 reprint). Type species: *Agrion filiola* Perty, 1834 (Steinmann 1977 by subsequent designation).

[NOTE: misspelled as “*Erythargrion*” by Steinmann 1997: 358, who states: “Type-species: *Agrion filiola* Perty, 1834 (original designation);” however, when erecting genus *Erythrargrion* Selys (1876) included seven species and did not designate a type species.]

*Helveciagrion* Machado, 1980: 60. Type species *H. vulcanoae* Machado, 1980 (by original designation); **syn. nov.**

Justification of synonymy of *Helveciagrion*

From the characters proposed for *Helveciagrion* (Machado 1980; Costa & Santos 2001), the presence of an inner fold in the genital ligula, MP not reaching level of IR<sub>1</sub>, and lack of a ventral spine on female S8 are shared by all species of *Telebasis*, and the occasional presence of postocular spots (*T. boomsmae*, *T. gigantea*, *T. leptocyclus*, *T. sanguinalis*), overall body coloration primarily blue, and approximate condition of male cerci are shared by several species of *Telebasis*: *T. bastiaani*, *T. demarara*, and *T. dunklei* are blue, while *T. livida* and *T. rubricauda* are red and blue; males of *T. boomsmae*, *T. collopistes*, and *T. garrisoni*, which are entirely red species, have approximate cerci. Thus none of these characters and no other combination of characters can be employed to confidently diagnose two genera within this complex of species, and I consider *Helveciagrion* a junior subjective synonym of *Telebasis*.

## Diagnosis

Small to medium-sized (body length 22-44), primarily red and black or blue and black coenagrionids with following combination of characters, none of which can be considered unique: angulate frons (Fig. 1b; not strongly angulate in *T. gigantea* and *T. racenisi*); almost always lacking postocular spots; wings usually stalked to level of CuP (proximally to CuP only in *T. racenisi*, Fig. 11c); often with some degree of metallic mid-dorsal striping on mesepisternum and/or mesepimeron (e.g. Figs 4c, i, l, n); tarsal claw with a distinct supplementary tooth; male cercus with no separate ventro-basal articulated branch; genital ligula always with an inner fold, lacking an accessory membranous transverse fold distal to flexure, and all but 11 (*T. carmesina*,

*T. carminita*, *T. carvalhoi*, *T. corallina*, *T. farcimentum*, *T. isthmica*, *T. leptocyclia*, *T. paraensei*, *T. racenisi*, *T. sanguinalis*, and *T. simulata*) with a minute to well-developed chitinized round or denticulate tubercle at each laterobasal angle of flexure (shared with *Aeolagrion* Williamson, 1917 and present as a pair of isolated sclerotized digits in *T. gigantea*); female with a pair of anteriorly-directed strap-like processes on middle lobe of prothorax, vestigial or absent in some species; mesanapleural suture linear or slightly convex; sternum of S8 lacking a vulvar spine; dorsum of S10 with a medio-longitudinal cleft along posterior 0.50 or more (as in Fig. 26a); and ovipositor not extending beyond S10, except for *T. filiola*, *T. inalata*, and *T. willinki*.

## Biology

Adults of *Telebasis* are generally inhabitants of swamps, ponds, marshes, and pools; they seem to be absent at rivers or creeks although a few may be found at spring-fed runs. Adults often land on stems of emergent vegetation by water's side or on vegetation away from water where they may be easily collected with a net. The three small species *T. filiola*, *T. inalata*, and *T. willinki* are often found sitting on floating masses of *Azolla* or *Lemna* (Pl. IIIb) on ponds where they dart rapidly from one site to another when disturbed. According to DRP (pers. comm.) most species of *Telebasis* he has encountered in the field are more often associated with continuous mats of floating vegetation than any other zygopterans; this includes *Pistia* and *Eichhornia* as well as *Lemna*, *Spirodela*, and *Azolla*. Larvae have been described for the following species: *T. boomsmae* (Garrison 1994), *T. byersi* (Westfall 1957), *T. corallina* (Westfall & May 2006), *T. demarara* (Geijskes 1941), *T. digiticollis* (Novelo-Gutiérrez & Gómez-Anaya 2005), *T. dominicana* (Westfall & May 2006), *T. filiola* (Westfall & May 2006), *T. salva* (Needham 1904; Geijskes 1943), *T. simulata* (Geijskes 1943 as *T. sanguinalis*), *T. vulnerata* (García-Díaz 1938; Geijskes 1943), and *T. willinki* (Bulla 1970).

## Comparison with New World genera of Coenagrionidae

Of the 48 known genera of New World Coenagrionidae, 15 have an angulated frons (including *Telebasis*, Fig. 1b), and among these three (*Aceratobasis* Kennedy, 1920, *Inpabasis* Santos, 1961, and *Metaleptobasis* Calvert, 1907) have a vestigial supplementary tooth on the tarsal claw. *Telebasis* can be differentiated from the remaining 12 genera through the following key (modified from von Ellenrieder & Garrison 2009):

1. Small to robust tubercle on sternum of S1 (Fig. 12a) ... *Minagrion* Santos, 1965
- 1'. No tubercle on sternum of S1 (Fig. 28) ..... 2
2. Thorax orange with a pair of pale olive to pale blue oblique stripes: an elongate stripe extending from dorsal margin of humeral suture on mesepimeron postero-ventrally to metacoxae and another smaller stripe obliquely traversing metepimeron (Fig. 4a) ..... 3
- 2'. Thorax uniform in color or with a pattern of spots or stripes the last of which, if present, run parallel to thoracic sutures (Figs 4b-o) ..... 4

3. Wing petiolation ending well before level of CuP, so that distance between end of petiolation and CuP is longer than twice the length of CuP ..... *Hylaeonympha* Rácenis, 1968
- 3'. Wing petiolation ending at level of CuP, or if before, then distance between end of petiolation and CuP shorter than twice as long as CuP ..... *Phoenicagrion* von Ellenrieder, 2008
4. Angle of frons with a distinct carina (ca, Fig. 1a); wing petiolation ending before level of CuP so that distance between end of petiolation and CuP is at least as long as CuP (Fig. 11a); dorso-posterior margin of male S10 with a row of uniformly sized, evenly spaced denticles; female dark, with black mid-dorsal thoracic stripe, smaller species ( $Hw \leq 15$ ) ..... *Nehalennia* Selys, 1850
- 4'. Angle of frons lacking a distinct carina (Fig. 1b); wing petiolation ending at level of CuP, if before then for a distance shorter than length of CuP (Figs 11b, d), or, if wing petiolation ending before level of CuP and distance between end of petiolation and CuP is as long as CuP (Fig. 11c), then dorso-posterior margin of male S10 without denticles; female pale, reddish, without black mid-dorsal thoracic stripe, larger species ( $Hw \geq 17$ ) ..... 5
5. Postocular lobes prominent, surpassing posteriorly a straight line drawn over posterior margin of eyes (Fig. 2a) ..... 6
- 5'. Postocular lobes not prominent, not surpassing posteriorly a straight line drawn over posterior margin of eyes (Figs 2b-g) ..... 7
6. Metatibial spurs thick and much shorter than interval separating them (Fig. 10d); female with conspicuous strongly divergent pair of anteriorly directed straps extending over middle lobe of pthx (Fig. 5c); E North America ..... *Chromagrion* Needham, 1903
- 6'. Metatibial spurs longer than interval separating them (Fig. 10a); female with middle lobe of pthx bare (Fig. 5a); Chile and SW Argentina ..... *Antiagrion* Ris, 1904
7. Male paraproct rudimentary, not visible in lateral view (Fig. 20d); female valves of ovipositor with several rows of teeth (Fig. 26e) ..... *Leptagrion* Selys, 1876
- 7'. Male paraproct visible in lateral view (Fig. 20c); valves of ovipositor with a single row of teeth (Fig. 26f) ..... 8
8. Male paraproct ca twice as long as S10 (Fig. 20c); female abd  $\geq 35$ ; Jamaica and Hispaniola ..... *Diceratobasis* Kennedy, 1920
- 8'. Male paraproct shorter to subequal to S10, rarely slightly longer than S10 (e.g. Figs 21a, b; 22f, m); Neotropical region, if from Jamaica and Hispaniola then female abd  $\leq 33$  ..... 9
9. Male cercus with a separate ventrobasal articulated branch (Fig. 16b); female abd  $\geq 25$ ; ovipositor surpassing posterior margin of S10; female basal plate of ovipositor large, easily visible, roughly orthogonal (Fig. 26g) ..... 10
- 9'. Male cercus lacking separate ventrobasal articulated branch (Figs 16d-p; 17-19); female ovipositor not surpassing posterior margin of S10 (Fig. 26c), or if surpassing S10 (Fig. 26d) then abd  $\leq 20$ ; female basal plate of ovipositor small, sometimes completely hidden, and acute ..... 11

10. Male paraproct slightly shorter to longer than cercus; female dorsum of S10 longitudinally cleft (as in Fig. 26a); postero-dorsal margin of female S9 lacking teeth ..... *Tepuibasis* De Marmels, 2007
- 10'. Male paraproct shorter than 0.50 of cercus; female dorsum of S10 entire (as in Fig. 26b); postero-dorsal margin of female S9 with teeth ..... *Bromeliagrion* De Marmels in De Marmels & Garrison, 2005
11. Male cercus vertically expanded latero-distally (Figs 16a; 20a); female lacking anteriorly-directed strap-like processes on anterior margin of prothoracic lobe (Fig. 5b); female mesanapleural suture usually markedly convex dorsally (Fig. 5b; except for *A. axine* with linear mesanapleural suture) ..... *Aeolagrion*
- 11'. Male cercus not expanded latero-distally (Figs 16d-p; 17-19; 20e-s; 21; 22); female of many species with a pair of anteriorly-directed strap-like processes on anterior margin of prothoracic lobe lying on middle lobe of pthx (e.g. Figs 5o; 6c), in some species vestigial (e.g. Figs 5g, j) or absent (e.g. Figs 5f, h, i, k; 6e; 7c); mesanapleural suture linear or slightly convex (e.g. Figs 4c-o) ..... *Telebasis*

Positive separation of *Aeolagrion* from all members of *Telebasis* is difficult, as shown in last couplet of previous key, and one could argue for unification of both genera. I have refrained from doing so pending a revision of *Aeolagrion* by KJT (pers. comm.).

#### Comparison with Old World genera of Coenagrionidae

Male caudal appendages of *Ceriagrion tenellum* (De Villers, 1789) (Figs 16c; 20b) are similar to those of species of *Telebasis* with approximate cerci (e.g. Figs 18g, n, o; 19d, g). The palaetropical genus *Ceriagrion* Selys, 1876, including the Palearctic species *C. tenellum* would seem to be the Old World genus closest to *Telebasis*. In his framework of a panbiogeographic analysis, De Marmels (2007) placed both *Telebasis* and *Aeolagrion* along with *Ceriagrion* in Kennedy's (1920a) *Ceriagrion-Telebasis-Metaleptobasis* series, defined primarily by an angulate frons and lack of separate ventral articulated branch to the cercus. He indicated that a transatlantic tract connects *Ceriagrion* (South Central Africa) with *Telebasis*, and remarked "Based on penis morphology *Telebasis*, *Ceriagrion*, and "*C. tenellum* are hardly separable at the generic level."

Cowley (1935) differentiated *Telebasis* from *Ceriagrion* and *Paleobasis* (genus created by Kennedy 1920b for *C. tenellum*) by penis-shaft with spines versus lacking spines respectively. However, I found this to be an unreliable character. Shaft hairs are small and barely noticeable in almost all *Telebasis* I examined; I was unable to find hairs on *T. aurea*, *T. gigantea*, *T. livida*, and *T. racenisi*, but longer series of specimens may show these small structures, which are often difficult to see and may become dislodged when the ligula is extruded, to be present. I also found a couple to a series of small hairs in *C. aeruginosum* (Brauer, 1869), *C. aurantiacum ryukyuanum* Asahina, 1967, *C. cerinorubellum* (Brauer, 1865) (Fig. 12b), and *C. tenellum* (Fig. 12c), but no hairs in *C. azureum* (Selys, 1891), *C. chaoi* Schmidt, 1964, *C. coromandelianum* (Fabricius, 1798), *C. fallax pendleburyi* Laidlaw, 1931, *C. glabrum* Burmeister, 1839, *C. indochinense* Asahina, 1967, *C. lieftincki* Asahina, 1967, *C. malaisei* Schmidt, 1964, *C. melanurum* Selys, 1876, *C. nipponicum* Asahina, 1967, *C. olivaceum olivaceum* Laidlaw, 1914, *C. pallidum* Fraser, 1933,

and *C. praetermissum* Lieftinck, 1929. Asahina (1967) discussed the systematic position and illustrated secondary sexual characters of the two European species *C. georgifreyi* Schmidt, 1953, and *C. tenellum*, and considered *Paleobasis* a subgenus of *Ceriagrion*.

Characters which I found that diagnose *Telebasis* from *Ceriagrion* are metatibial spur morphology and condition of the occiput. Metatibial spurs are long, thin, almost bristle-like, and are as long or slightly longer than intervals between them in *Telebasis* (Fig. 10c), while they are robust, thick, and shorter than intervals between them in *Ceriagrion* (Fig. 10b). Posterior margin of the occiput in *Telebasis* is transverse or nearly so (Fig. 3a), with a slight medial notch only in *T. aurea* and in some *T. salva*, whereas there is a well-marked medial notch (Figs 3b, c) in all *Ceriagrion* species that I examined. In addition, the chitinized round or denticulate tubercle at each latero-basal angle of genital ligula flexure present in all *Telebasis* except in *T. corallina* group of species (see *Telebasis* diagnosis), is never present in *Ceriagrion*, and, as was noted by De Marmels (2007), the frons is less angled (without any carinal demarcation) and narrower in *Telebasis* compared to the strongly angulate (almost always with a transverse carina) and relatively wider frons in *Ceriagrion*.

### Key to males of *Telebasis*

(adapted from Bick & Bick 1995; Westfall & May 2006)

1. Cerci approximate (e.g. Figs 25c, h, m, p-r, v, w) or nearly so (Figs 25e, i), distance between bases of cerci  $\leq 0.20$  basal width of each cercus ..... **Key M-1**
- 1'. Cerci not approximate, distance between bases of cerci  $\geq 0.50$  basal width of each cercus (e.g. Figs 25a, b, d, f, g, k, l, n, o, s-u, x) ..... 2
2. Wings flavescent ..... **Key M-2**
- 2'. Wings hyaline ..... 3
3. In lateral view, cercus with a complete elongate seam, appearing two-parted (e.g. Figs 20l, n, o, s; 21u; 22f, j) ..... **Key M-3**
- 3'. Cercus without such a seam or seem incomplete (e.g. Figs 20e-k, p-r) ..... 4
4. Cercus in lateral view twice or more the length of paraproct (e.g. Figs 21a, b; 22f, j, m), if not twice as long, cercus apically notched (Fig. 22c) ..... **Key M-4**
- 4'. Cercus in lateral view less than twice the length of paraproct, and not apically notched (e.g. Figs 20e-k) ..... 5
5. Rear of head mostly pale (e.g. Figs 1d, e) ..... **Key M-5**
- 5'. Rear of head mostly black (e.g. Figs 1c, f) ..... 6
6. Labrum red or orange ..... **Key M-6**
- 6'. Labrum blue or black (dark color confined to basal 0.60 or more of labrum) ..... **Key M-7**

### Key M-1 (cerci approximate)

1. Largely pale blue species with or without black on postocular area of head (Figs 2g; 28) ..... 2
- 1'. Largely pale red or orange species with black on postocular area of head (as in Figs 2b, d) ..... 6

2. Cercus in medio-dorsal view without a dorsally directed tooth or ridge along postero-medial edge; cercus circular, ca as wide as long (Figs 18b; 21q; 25n) and with two robust teeth along ventro-distal margin; Rondônia State, Brazil (Fig. 37) ..... *T. leptocyclia*
- 2'. Cercus in medio-dorsal view with a dorsally directed tooth (Figs 18n, o) or ridge (Fig. 18g) along postero-medial edge; cercus transverse, wider than long (Figs 25p-r, v, w), and with an obtuse black tooth (Figs 18n, o; 25q, r) ..... 3
3. Cercus in medio-dorsal view with a dorsally directed tooth along postero-medial edge followed along posterior margin by a robust, obtuse black tooth at distal 0.30 (Figs 18n, o); cercus ca twice as wide as long (Figs 25q, r), Rondônia and Mato Grosso States, Brazil, Bolivia, and NE Argentina (Fig. 35) .... *T. simulacrum*
- 3'. Cercus in dorsal view with a dorsally directed ridge along medial edge followed along posterior margin by a pronounced glabrous transverse ridge (Figs 25p, v) or with a lamellate ridge (Fig. 25w); cercus ca 1.5 or less as wide as long (Figs 25p, v, w) ..... 4
4. Cercus in lateral view with a dorsally directed medial ridge strongly elevated and visible (Fig. 22a), postero-distal margin acuminate (Figs 18g; 25p); Pará State, Brazil and Ecuador south to Bolivia and N Argentina (Fig. 35) ..... *T. obsoleta*
- 4'. Cercus in lateral view with a reduced dorsally directed medial ridge, slightly (Fig. 22n) or not (Fig. 22q) visible, postero-distal margin slightly angular (Figs 19d, g; 25v, w) ..... 5
5. Medial and posterior margin of cercus forming a raised ridge (Fig. 19d); rear of head pale; Minas Gerais and Bahia States, Brazil (Fig. 35) ..... *T. vulcanoae*
- 5'. Only posterior margin of cercus forming a raised ridge followed ventrally by a pale transverse laminate ridge (Fig. 19g); rear of head black; Colombia and Venezuela (Fig. 35) ..... *T. williamsoni*
6. Cerci nearly approximate, a small but distinct gap separating them; a small medially directed tooth at base of cercus as well as an apical pair of teeth (Figs 17f; 25j); lig in lateral view with narrow, linear posteriorly directed lobe along ventral 0.50 of apical segment (Fig. 13f); Greater Antilles (Fig. 30) ..... *T. dominicana*
- 6'. Cerci approximate, their medial margins touching; with only one tooth along medial margin of cercus (Figs 25c, e, h, m); lig in lateral view with no linear posteriorly directed lobe along ventral 0.50 of apical segment (Figs 12h, l; 13a, m); Mexico south through Bolivia ..... 7
7. Cercus with no large blunt medial tooth; medial margins of cerci diverging from base (Figs 16l; 25e); tip of apical segment of lig transverse (Fig. 12l); Guyanas south through Paraguay (Fig. 40) ..... *T. carminita*
- 7'. Cercus with a large blunt medial tooth; medial margins of cerci not diverging from base (Figs 16h; 17a, m; 25c, h, m); tip of apical segment of lig acute (Figs 12h; 13a, m) ..... 8
8. Rear of head mostly black; appendages as in Figures 17a; 24b; 25h; Mexico south through Honduras (Fig. 33) ..... *T. collopistes*
- 8'. Rear of head pale ..... 9



- 9. Postero-distal margin of cercus bluntly pointed (Figs 17m; 24c; 25m), paraproct slightly longer than cercus in lateral view (Fig. 21k); Colombia and Venezuela (Fig. 38) ..... *T. garrisoni*
- 9'. Postero-distal margin of cercus rounded (Figs 16h; 24a; 25c), paraproct much longer than cercus in lateral view (Fig. 20i); S Mexico and Belize (Fig. 33) ..... *T. boomsmae*

**Key M-2** (wings flavescent or slightly so)

- 1. Rear of head mostly pale; SE Brazil and NE Argentina (Fig. 43) ... *T. theodori*
- 1'. Rear of head mostly black; Costa Rica and South America ..... 2
- 2. Smaller species (Hw 14-17, abd 19-23); cercus in medio-dorsal view widest basally, with acuminate tip (Figs 16g; 17h); lig with distal margin concave in dorsal view, in lateral view with an acuminate distal lobe (Figs 12g; 13h); South America ..... 3
- 2'. Larger species (Hw > 20, abd > 33); cercus in medio-dorsal view widest distally, with broadly rounded tip (Figs 16e; 17l); lig lacking pointed lobes (Fig. 12e) or with a ventro-posteriorly directed quadrate lobe along ventral 0.50 of apical segment (Fig. 13l); Costa Rica, Colombia, and Ecuador ..... 4
- 3. Larger species (Hw 16-17, abd 23); mesepisternum anteriorly with narrow black band separated by pale mid-dorsal carina (Fig. 4i); medial margin of cercus with an oblique vertical ridge at distal 0.33 (Fig. 17h); lig in lateral view with a posteriorly directed acuminate lobe on ventral 0.50 of apical segment (Fig. 13h); Minas Gerais, Brazil (see also Key M-6) (Fig. 43) ..... *T. erythrina* (in part)
- 3'. Smaller species; (Hw 13-15, abd 19-22); entire mesepisternum black except for narrow pale line lateral to humeral suture (Fig. 4e); medial margin of cercus with a medially directed tooth at distal 0.25 (Fig. 16g); lig in lateral view with no posteriorly directed acuminate lobe on ventral 0.50 of apical segment (Fig. 12g); Ecuador and Bolivia (see also Key M-6) (Fig. 37) ..... *T. bickorum* (in part)
- 4. Pale color of abd dorsum mostly golden-orange; black on epicranium extending anteriorly barely beyond ocelli; paraproct subequal to cercus (Fig. 20f); lig lacking pointed lobes, its tip forming a gently widened spatulate lobe (Fig. 12e) (Fig. 36) ..... *T. aurea*
- 4'. Pale color of abd dorsum mostly red or orange-red; black on epicranium extending anteriorly at least to bases of antennae; paraproct distinctly longer than cercus (Fig. 21j); lig with a ventro-posteriorly directed quadrate lobe along ventral 0.50 of apical segment (Fig. 13l); Costa Rica, Colombia, and Ecuador (see also Key M-7) (Fig. 36) ..... *T. garleppi* (in part)

**Key M-3** (cercus with a complete elongate seam)

- 1. Cercus in lateral view slightly longer than paraproct (Figs 20l; 21u) ..... 2
- 1'. Cercus in lateral view ca twice as long as paraproct (Figs 20o, s; 22f, j) ..... 3
- 2. Cercus in lateral view diamond-shaped; ventral margin of cercus convex (Fig. 21u); lig in lateral view with three lobes, inner fold well developed, extending beyond

- apical segment of lig (Fig. 14f); Madre de Dios Department, Peru (Fig. 42) ..... *T. milleri*
- 2'. Cercus in lateral view oval shaped; ventral margin of cercus in lateral view concave (Fig. 20l); lig in lateral view with one posteriorly directed lobe, inner fold small, poorly developed (Fig. 12k); SE Brazil, Paraguay, Bolivia, and N Argentina (Fig. 41) ..... *T. carmesina*
3. Cercus in lateral view less than twice as long as wide; ventro-medial surface of cercus strongly concave (Figs 20o, s), ventral tooth at ca 0.50 of cercus length (Figs 16n; 17b) ..... 4
- 3'. Cercus in lateral view twice as long as wide; medial surface of cercus concave along narrow ventral margin (Figs 22f, j), ventral tooth at basal 0.30 of cercus length (Figs 18l, p) ..... 5
4. Cercus in lateral view mitten-shaped, posterior margin rounded; expanded ventral margin more or less linear (Fig. 20s); Lesser Antilles, Cuba, and Costa Rica south through Brazil (Fig. 40) ..... *T. corallina*
- 4'. Cercus in lateral view triangular, posterior margin acute; expanded ventral margin tapering distally (Fig. 20o); Pará, Brazil (Fig. 41) ..... *T. carvalhoi*
5. Rear of head mostly pale (except for two circular dark spots near occipital foramen, as in Fig. 1e); cercus in lateral view less than twice as long as wide; cercus with sides largely parallel, its tip broadly rounded (Fig. 18p; 22j); N Brazil to Trinidad (Fig. 41) ..... *T. simulata*
5. Rear of head with dorsal 0.50 black, ventral 0.50 pale (as in Fig. 1f); cercus in lateral view more than twice as long as wide; cercus with sides slightly converging posteriorly, its tip slender and pointed (Figs 18l; 22f); S Brazil to Bolivia (Fig. 41) ..... *T. sanguinalis*

**Key M-4** (cercus in lateral view twice or more the length of paraproct or apically notched)

1. Abd without either red or orange-red; no accessory teeth other than recurved tooth at tip of cercus (Fig. 17d); Trinidad and Guyanas south through Peru and N South America (Fig. 36) ..... *T. demarara*
- 1'. All or some abd segments red or orange-red; at least one supplementary tooth along medial or ventral margin of cercus (Figs 17c; 18i, j; 19c; 23d) ..... 2
2. Cercus in lateral view narrow, apically notched (Fig. 22c) and in medio-dorsal view with a tooth at basal 0.33 (Fig. 18i); Venezuela, Peru, and W Brazil (Fig. 39) ..... *T. racenisi*
- 2'. Cercus in lateral greatly swollen at basal 0.50, apically entire (Figs 21a; 22d, m) and in medio-dorsal view with a lobe (Fig. 17c; 19c) or elongate rim at basal 0.50 (Fig. 18j) ..... 3
3. Medial 0.33 of prothoracic posterior lobe evenly curved (Fig. 9f); only S8-10 red; ventral margin of cercus in medio-dorsal view with elongate rim at basal 0.50 as well as small, incurved apical tooth (Fig. 18j); apical segment of lig unbranched (Fig. 14j); Venezuela south through Brazil, Peru and Bolivia (Fig. 37) ..... *T. rubricauda*
- 3'. Medial 0.33 of prothoracic posterior lobe quadrate (Figs 9c, h); all abd segments

red-orange; ventral lobe on cercus at basal 0.50 and with (Fig. 19c) or without (Fig. 17c) a medially directed tooth on medial margin at distal 0.65; tip of cercus lacking tooth; apical segment of lig two-branched (Figs 13c; 15a); SE Colombia, Ecuador, and Peru ..... 4

4. A medially directed tooth on medial margin at distal 0.65 (Fig. 19c); paraproct in lateral view forming a single lobe (Fig. 22m); SE Colombia, Ecuador, and Peru (Fig. 42) ..... *T. versicolor*
- 4'. No medially directed tooth on medial margin at distal 0.65 (Fig. 17c); paraproct in lateral view divaricate (Fig. 21a); Peru and Bolivia (Fig. 42) ..... *T. corbeti*

#### Key M-5 (rear of head mostly pale)

1. An isolated, medially directed tooth at medial 0.50 of cercus (Fig. 17i); Colombia (Fig. 39) ..... *T. farcimentum*
- 1'. Medial surface of cercus lacking a tooth at 0.50 (e.g. Figs 16f, j, o, p; 17n; 18k) ..... 2
2. Largely pale blue species, labrum blue; cercus in medio-dorsal view bidentate ventro-apically, a minute tooth followed by a large unidentate black tooth (Fig. 16f); Venezuela (Fig. 36) ..... *T. bastiaani*
- 2'. Largely pale red or orange species, labrum orange or red; cercus otherwise, or if bidentate ventro-apically (Figs 17q; 23b), then minute tooth followed by large perpendicular elongate bidentate black tooth ..... 3
3. Posterior portion of mesepisternal black stripe with a distinct lateral projection at dorsal 0.25 (as in Fig. 4l) ..... 4
- 3'. Posterior portion of mesepisternal black stripe linear (as in Figs 4f, g) ..... 6
4. Apex of cercus in medio-ventral view with ventrally projecting bidentate black tooth (Fig. 23b); Baja California (Fig. 29) ..... *T. incolumis*
- 4'. Apex of cercus in medio-ventral view with ventrally projecting unidentate black tooth (as in Fig. 23a) ..... 5
5. Cercus in lateral view slightly shorter than paraproct; dorsal margin of cercus straight forming a gentle curve (Fig. 20k); SE USA (Fig. 29) ..... *T. byersi*
- 5'. Cercus in lateral view only a little more than 0.50 of paraproct length; dorsal margin of cercus straight beyond basal 0.30 (Fig. 22e); SW USA through Central America and Venezuela (Fig. 29) ..... *T. salva*
6. Black tooth of cercus in medio-dorsal view anteapical (Figs 16o, p); lig in lateral view with narrow, linear posteriorly directed lobe along ventral 0.50 of apical segment (Figs 12o, p); Brazil and Paraguay (Fig. 38) ..... *T. coccinea*
- 6'. Black tooth of cercus in medio-dorsal view apical (Figs 16i; 17n; 18a, h); lig in lateral view with no linear posteriorly directed lobe along ventral 0.50 of apical segment (Figs 12i; 13n; 14b, h) ..... 7
7. Paraproct acuminate (Fig. 17n), its tip directed dorso-posteriorly (Fig. 21l); apical segment of lig small, slightly inflated distally in lateral view and ending in a small, recurved flap (Fig. 13n); large species (Hw 22-24, abd 35-38); Bolivia (Fig. 37) ..... *T. gigantea*

- 7' Paraproct rounded and dorsally concave (Figs 16i; 18a, h), its tip directed dorso-posteriorly (Fig. 20j) or posteriorly (Figs 21p; 22b); apical segment of lig terminating in a long, whip-like process (Figs 12i; 14b) or broadly transverse laterally with a posteriorly directed lobe (Fig. 14h); smaller species (Hw 14-18, abd 22-30) ..... 8
8. Apex of cercus in medio-ventral view with ventrally projecting bidentate black tooth (Fig. 16i); prothoracic posterior lobe strongly elevated and medially concave (Fig. 9b); Ecuador (Fig. 31) ..... *T. brevis*
- 8'. Apex of cercus in medio-ventral view with ventrally projecting unidentate black tooth (Figs 18a, h); prothoracic posterior lobe undifferentiated ..... 9
9. Larger species (Hw 16, abd 27); paraproct apically broadly truncate; cercus linear with a ventro-apical tooth (Fig. 18a; 21p); apical segment of lig terminating in a whip-like process (Fig. 14b); Mexico south through Colombia and Venezuela (Fig. 31) ..... *T. isthmica*
- 9'. Smaller species (Hw 13, abd 20); paraproct not broadly truncate; cercus strongly arcuate with a ventro-apical and a ventro-basal tooth (Figs 18h; 22b); apical segment of lig transverse laterally with posteriorly directed lobe (Fig. 14h); Minas Gerais State, Brazil (Fig. 41) ..... *T. paraensei*

#### Key M-6 (labrum red or orange)

1. Cercus in lateral view with a conspicuous dorsal hump near its base (Fig. 20n); apical portion of cercus flattened and terminating in a broadly recurved tooth (Fig. 16m); Colombia, Ecuador, and Bolivia (Fig. 42) ..... *T. carota*
- 1'. Cercus in lateral view forming a gentle curve (Figs 20h; 21f, m) or slightly arched (Figs 21c, r; 22p); apical portion of cercus not flattened ..... 2
2. Paraproct broadly concave dorsally and armed with an acuminate tip; apical tooth of cercus bidentate, ca as wide as high (Fig. 19e); Puerto Rico and Hispaniola (Fig. 30) ..... *T. vulnerata*
- 2'. Paraproct either broadly concave dorsally (Figs 16g; 17h; 19f; 20h; 21f; 22p) or acuminate (Figs 17e, o; 18d; 21c, m, r); cercus armed with an antepical conical tooth (Fig. 16g) or tooth apical and diagonally linear (Fig. 17e, h, o; 18d; 19f), two to three times longer than wide; Mexico to South America ..... 3
3. Paraproct acuminate (Figs 17e, o; 18d; 21c, m, r) ..... 4
- 3'. Paraproct broadly concave dorsally (Figs 16g; 17h; 19f; 20h; 21f; 22p) ..... 6
4. Cercus in medio-dorsal view narrow, its apex angulate (at, Figs 18c, d); Mexico south through Costa Rica (Fig. 32) ..... *T. levis*
- 4'. Cercus in medio-dorsal view wide, its apex rounded (rt, Figs 17e; 18d) ..... 5
5. Posterior prothoracic lobe black dorsally (may be reduced to an isolated medio-basal black spot); mesepimeron usually with a black medial stripe (Fig. 4h); E Mexico to N Panama (Fig. 32) ..... *T. digiticollis*
- 5'. Posterior prothoracic lobe brown or tan dorsally; mesepimeron without a black stripe; (Fig. 4k); Panama south through São Paulo, Brazil, and N Argentina (Fig. 32) ..... *T. griffinii*

6. Larger species (Hw 17-19, abd 26-28); cercus in medio-dorsal view oval, diagonal black tooth linear, ca twice as long as wide and notched medially; postero-dorsal margin of S10 denticulate (Fig. 19f); Huanuco Department, Peru (Fig. 42) ..... *T. watsoni*
- 6'. Smaller species (Hw 14-17, abd 20-23); cercus in medio-dorsal view linear, pointed apically, and armed with a black anteapical conical tooth; postero-dorsal margin of S10 smooth (Figs 16g; 17h); Ecuador, Bolivia and S Brazil 7
7. Larger species (Hw 17, abd 23), mesepisternum with medio-longitudinal narrow black stripe separated by pale mid-dorsal carina (Fig. 4i); medial margin of cercus with an oblique vertical ridge at distal 0.33 (Fig. 17h), lig in lateral view with a posteriorly directed acuminate lobe on ventral 0.50 of apical segment (Fig. 13h); Minas Gerais, Brazil (Fig. 43) (see also Key M-2) ..... *T. erythrina* (in part)
- 7'. Smaller species; (Hw 13-15, abd 19-22); entire mesepisternum black except for narrow pale line along anterior side of humeral suture (Fig. 4e); medial margin of cercus with a medially directed tooth at distal 0.25 (Fig. 16g); lig with no posteriorly directed acuminate lobe on ventral 0.50 of apical segment (Fig. 12g); Ecuador and Bolivia (Fig. 37) (see also Key M-2) ..... *T. bickorum* (in part)

#### Key M-7 (labrum blue or black)

1. Labrum mostly blue ..... 2
- 1'. Labrum mostly (basal 0.60 or more) black ..... 5
2. Body lacking red or orange; cercus with a pale medial process extending along its ventral surface (Fig. 17g); Ecuador, Peru, and Bolivia (Fig. 37) .... *T. dunklei*
- 2'. Body primarily red; cercus without such a pale medial ventral process ..... 3
3. Cercus short and with one small dorsal tooth as well as two apical teeth (Fig. 18m); distal segment of lig narrow with an abruptly expanded tip (Fig. 14m); Amazonas State, Venezuela (Fig. 39) ..... *T. selaopyge*
- 3'. Cercus lacking a small dorsal tooth (e.g. Figs 16d; 17k, l, p; 18e); distal segment of lig expanded at mid-length (e.g. Figs 13l; 14e) ..... 4
4. Larger species (abd 35); cercus rounded in medio-dorsal view (Fig. 17l); lig with a ventro-posteriorly directed quadrate lobe along ventral 0.50 of apical segment (Fig. 13l); Costa Rica, Colombia, and Ecuador (Fig. 36) (see Key M-2) ..... *T. garleppi* (in part)
- 4'. Smaller species (abd 17-23); cercus apically pointed in medio-dorsal view (Fig. 18e); lig with a ventro-posteriorly arcuate expansion along ventral 0.50 of apical segment (Fig. 14e); Ecuador, Peru, and Bolivia (Fig. 38) ..... *T. livida*
5. Black medial tooth of cercus forming a bulb-shaped structure on medial 0.50 as well as a less conspicuous ventro-apical tooth (Fig. 17k); cercus with an apical cone of bristles (Fig. 21i); only anterior and posterior abd segments red; apical segment of lig forming a long, divaricate whip-like process (Fig. 13k); Ecuador (Fig. 31) ..... *T. flammeola*
- 5'. Black medial tooth of cercus forming only a recurved tooth along ventral margin (Figs 16d; 17j, p; 19h); cercus without apical cone of bristles; apical segment of

lig broad, not whip-like (Figs 12d; 13j, p; 15f); all abd segments red (Pls Ib, IIIb), or only S8-10 red (except for populations of *T. inalata* from W Ecuador; Pl. Ic) ..... 6

6. Distal 0.50 of paraproct bent sharply dorsad; pointed in lateral view (Figs 16d; 20e); cercus with a conspicuous recurved tooth at apical 0.33 (Fig. 16d); apical segment of lig rounded, lateral margin simple, lacking specialized lobes (Fig. 12d); Rondônia State, Brazil (Fig. 38) ..... *T. abuna*
- 6'. Distal 0.50 of paraproct straight; truncate or pointed in lateral view; cercus with a conspicuous recurved tooth at medial 0.50 to apical margin (Figs 17j, p; 19h); apical segment of lig transverse, laterally with a digit-like lobe along medial 0.50 (Figs 13j, p; 15f) ..... 7
7. Medio-dorsal margin of S10 lacking elevated black rim (Fig. 17p); cercus in lateral view extending well beyond paraproct (Fig. 21n); Ecuador, Peru, Bolivia, S Brazil, and NW Argentina (Fig. 34) ..... *T. inalata*
- 7'. Medio-dorsal margin of S10 with elevated black rim (Figs 17j; 19h); cercus in lateral view slightly longer to shorter than paraproct (Figs 21h; 22r) ..... 8
8. Cercus in medio-dorsal view narrowing to tip (Fig. 19h); cercus subequal to paraproct (Fig. 22r); SE Brazil, Bolivia, and Argentina (Fig. 34) ..... *T. willinki*
- 8'. Cercus in medio-dorsal view parallel sided to tip (Fig. 17j); cercus ca 0.50 of paraproct length (Fig. 21h); Mexico south through SE Brazil and NE Argentina (Fig. 34) ..... *T. filiola*

Key to males of *Telebasis* based primarily on structure of ligula

1. Apical segment forming a whip-like process (Figs 12i; 13k; 14b)..... **Key Ma-1**
- 1'. Apical segment not forming a whip-like process (e.g. Figs 12e, j, n; 14m) ... 2
2. Inner fold well developed, extending to 0.75 of apical segment or beyond ..... **Key Ma-2**
- 2'. Inner fold vestigial, small, or poorly developed, extending at most to 0.50 of apical segment ..... 3
3. Tip greatly expanded, trumpet-shaped in dorsal view (e.g. Figs 12n; 13b; 14o) ..... **Key Ma-3**
- 3'. Tip narrow or slightly expanded in dorsal view (Figs 13f; 15c) ..... 4
4. Tip strongly divaricate, each arm ca as long as base of apical segment; with no accessory lateral lobes (Fig. 12g); Ecuador and Bolivia ..... *T. bickorum*
- 4'. Apical segment club- or trowel-shaped and, in some species, terminating in a posteriorly directed lobe or its lateral margin often expanded but abruptly narrowing at apical 0.25; with or without accessory lateral lobe (e.g. Figs 12o, p; 13d, f; 14e) ..... 5
5. Apical segment trowel-shaped, its lateral margin gently expanding to mid-length and, in some species, terminating in a posteriorly directed lobe; with or without accessory lateral lobe (e.g. Figs 12o, p; 13f; 14e) ..... **Key Ma-4**
- 5'. Apical segment clubbed, its lateral margin expanded distally in lateral view (e.g. Figs 13d, f, g; 14j) ..... **Key Ma-5**

**Key Ma-1** (apical segment of lig forming a whip-like process)

1. Prothoracic posterior lobe broadly rounded laterally (as in Fig. 9f); apical segment of lig forming a bifid whip-like process (Fig. 13k); Ecuador ... *T. flammeola*
- 1'. Prothoracic posterior lobe broadly and bluntly angulate laterally (as in Fig. 9e) or strongly elevated and medially concave (Fig. 9b); apical segment of lig forming an unbranched whip-like process (Figs 12i; 14b) ..... 2
2. Prothoracic posterior lobe strongly elevated laterally and medially concave (Fig. 9b); labrum dark; Ecuador (Fig. 31) ..... *T. brevis*
- 2'. Prothoracic posterior lobe broadly and bluntly angulate laterally, not strongly elevated (as in Fig. 9e); labrum orange; Mexico south through Colombia and Venezuela (Fig. 31) ..... *T. isthmica*

**Key Ma-2** (inner fold well developed, extending to or beyond apex of lig)

1. Lig with distal margin concave in dorsal view, in lateral view with a distal lobe followed by a posteriorly directed acuminate lobe on ventral 0.50 of apical segment (e.g. Figs 13h; 14p); SE Brazil and N Argentina ..... 2
- 1'. Lig with distal margin transverse in dorsal view, in lateral view with one (Fig. 13l) to three spatulate lateral lobes (Figs 12m; 14f) ..... 3
2. Lig in lateral view with a semicircular lobe at basal 0.20 of apical segment (Fig. 14p); SE Brazil and N Argentina (Fig. 43) ..... *T. theodori*
- 2'. Lig in lateral view with no semicircular lobe at basal 0.20 of apical segment (Fig. 13h); Minas Gerais, Brazil (Fig. 43) ..... *T. erythrina*
3. Lig with a single large ventro-posteriorly directed lobe at 0.50 of apical segment (Fig. 13l); Costa Rica, Colombia, and Ecuador (Fig. 36) ..... *T. garleppi*
- 3'. Lig in lateral view with two (Figs 15a, d) or three (Figs 12m; 13c; 14f) lateral lobes ..... 4
4. Lig with three lateral lobes, the smaller third lobe at basal 0.50 of apical segment (Figs 12m; 13c; 14f) ..... 5
- 4'. Lig with two lateral lobes, lacking a smaller third lobe at basal 0.50 of apical segment (Figs 15a, d) ..... 7
5. Prothoracic posterior lobe with medial 0.33 quadrate (Fig. 9c); S4-7 dorsally black; Peru and Bolivia (Fig. 42) ..... *T. corbeti*
- 5'. Prothoracic posterior lobe evenly curved (as in Figs 9i, j); abd entirely red .. 6
6. Rear of head black (as in Fig. 1c); Colombia, Ecuador, and Bolivia (Fig. 42) ....  
..... *T. carota*
- 6'. Rear of head pale (as in Fig. 1d); Peru (Fig. 42) ..... *T. milleri*
7. Prothoracic posterior lobe with medial 0.33 quadrate (Fig. 9h); latero-distal lobes of lig in lateral view arising from a stalk (Fig. 15a); SE Colombia, Ecuador, and Peru (Fig. 42) ..... *T. versicolor*
- 7'. Prothoracic posterior lobe evenly curved (Fig. 9j); latero-distal lobes of lig in lateral view arising from a broad base (Fig. 15d); Huanuco Department, Peru (Fig. 42) ..... *T. watsoni*

**Key Ma-3** (tip of lig greatly expanded and trumpet-shaped in dorsal view)

(NOTE: Males of the *T. filiola* complex [except for pruinose males of *T. inalata*], are apparently distinguishable only by caudal appendage morphology; locality can be used as a partial means of species identification.)

1. Apical segment of lig planar in lateral view, broadly transverse with scoop-like lobes laterally followed at mid-length by postero-distally directed digit-like lobe in dorsal view (Figs 13j, p; 15f); Mexico south to Argentina (Fig. 34) ..... *T. filiola* complex (*T. filiola*, *T. inalata*, *T. willinki*)
- 1'. Apical segment of lig arched and scoop-like in lateral view (Figs 12k, l, n; 13b; 14h, l, o) ..... 2
2. Latero-apical margin of lig unmodified, broadly rectangular in lateral view (Figs 12n; 14o); N Brazil to Trinidad; Pará, and Brazil (Fig. 41) ..... *T. carvalhoi*, *T. simulata*
- 2'. Latero-apical margin of lig modified and forming a postero-lateral lobe (Figs 12k, l; 13b; 14h, l) ..... 3
3. Latero-apical margin of lig with postero-lateral lobe directed ventrally (Figs 12l; 13b) ..... 4
- 3'. Latero-apical margin of lig with postero-lateral lobe directed posteriorly (Figs 12k; 14h, l) ..... 5
4. Latero-apical margin of lig with postero-lateral lobe narrow, parallel-sided (Fig. 12l); Guyanas south through Paraguay (Fig. 40) ..... *T. carminita*
- 4'. Latero-apical margin of lig with postero-lateral lobe broad and with a small supplementary lobe on ventro-posterior margin (Fig. 13b); Lesser Antilles, Cuba, and Costa Rica south through Brazil (Fig. 40) ..... *T. corallina*
5. Mid-dorsal black stripe covering medial 0.40 or less of mesepisternum; orange postocular spot connecting to occipital bar (as in Fig. 2e); S Brazil to Bolivia (Fig. 41) ..... *T. sanguinalis*
- 5'. Mid-dorsal black stripe covering medial 0.40 or more of mesepisternum; orange postocular spot lacking or very small (as in Fig. 2d) ..... 6
6. Mesostigmal plate, including raised posterior margin, black, confluent posteriorly with broad mid-dorsal stripe, Minas Gerais State, Brazil (Fig. 41) ... *T. paraensei*
- 6'. Mesostigmal plate, including raised posterior margin, pale, so that broad mid-dorsal stripe appears constricted anteriorly; SE Brazil; Paraguay, Bolivia, and N Argentina (Fig. 41) ..... *T. carmesina*

**Key Ma-4** (apical segment of lig trowel-shaped, its lateral margin gently expanding to mid-length and, in some species, terminating in a posteriorly directed lobe; with or without accessory lateral lobe)

(NOTE: Males of *T. dominicana*, *T. vulnerata*, and the *T. salva*-complex are apparently distinguishable only by caudal appendage morphology; locality can be used as a partial means of species identification.)

1. Distal margin slightly concave in dorsal view; apical segment short, not surpassing apex of basal segment of lig when folded (Figs 13f; 15c); Greater Antilles and Virgin Islands (Fig. 30) ..... *T. dominicana*, *T. vulnerata* (in part)



- 1'. Distal margin convex or transverse in dorsal view, apical segment long, surpassing apex of basal segment of lig when folded; USA through South America (e.g. Figs 12j, o, p; 14k) ..... 2
2. With an accessory lateral lobe (Figs 12j, o, p; 14e) ..... 3
- 2'. With no accessory lateral lobe (Figs 12d, h; 13a, m) ..... 5
3. Pale color of thorax blue; labrum blue; Ecuador and Peru (Fig. 38) .... *T. livida*
- 3'. Pale color of thorax orange or red; labrum orange ..... 4
4. Mesepisternal black stripe linear; Brazil and Paraguay (Fig. 38) .... *T. coccinea*
- 4'. Mesepisternal black stripe with a distinct lateral projection at dorsal 0.25 (as in Fig. 4l) US south through Venezuela (Fig. 29) ..... *T. salva* complex (*byersi*, *incolumis*, *salva*)
5. Lateral margin of apical segment of lig gently rounded (Fig. 12d); Rondônia State, Brazil (Fig. 38) ..... *T. abuna*
- 5'. Lateral margin of apical segment of lig modified and forming an acute lobe (Figs 12h; 13a, m) ..... 6
6. Rear of head pale, southern Mexico, Belize (Fig. 33) ..... *T. boomsmae*
- 6'. Rear of head black ..... 7
7. Pthx entirely pale, Colombia and Venezuela (Fig. 38) ..... *T. garrisoni*
- 7'. Pthx with transverse black spots separating anterior, middle, and posterior lobes; Mexico south through Belize (Fig. 33) ..... *T. collopistes*

**Key Ma-5** (apical segment of lig clubbed, its lateral margin often expanded in lateral view but abruptly narrowing at apical 0.25)

1. Lig with a well-developed lateral lobe (Figs 13f; 15c); Greater Antilles and Virgin Islands (Fig. 30) ..... *T. dominicana*, *T. vulnerata* (in part)
- 1'. Lig lacking a lateral lobe (e.g. Figs 13d, g; 14g); Mexico through South America ..... 2
2. Posterior margin of mesostigmal plate with a raised tubercle (tu, Fig. 9d); Trinidad and Guyanas south through Peru and N South America (Fig. 36) .. *T. demarara*
- 2'. Posterior margin of mesostigmal plate without a raised tubercle (e.g. Fig. 9g) ..... 3
3. Pale color of thorax blue ..... 4
- 3'. Pale color of thorax olive, orange, or red ..... 11
4. Lateral margin of prothoracic posterior lobe angulate (an, Fig. 6h) ..... 5
- 4'. Lateral margin of prothoracic posterior lobe rounded (e.g. Fig. 9g) ..... 6
5. With some dorsal black on pthx, dark humeral stripe present; Ecuador, Peru, and Bolivia (Fig. 37) ..... *T. dunklei*
- 5'. Pthx pale, dark humeral stripe absent (as in Fig. 28); Ecuador and Pará State, Brazil south to Bolivia and N Argentina (Fig. 35) ..... *T. obsoleta*
6. Dorsal 0.50 or more of rear of head black (as in Figs 1c, f) ..... 7
- 6'. Rear of head mostly pale (as in Figs 1d, e) ..... 8

7. Obsolete interpleural suture with an isolated dark spot (as in Fig. 28); Colombia and Venezuela (Fig. 35) ..... *T. williamsoni*
- 7'. Side of thorax lacking an isolated dark spot; Venezuela south through Brazil, Peru, Bolivia, and W Brazil (Fig. 37) ..... *T. rubricauda*
8. Well-defined continuous linear rim between postero-medial corners of mesostigmal plates and mid-dorsal carina (Fig. 9g); W Brazil, Bolivia, and NE Argentina (Fig. 35) ..... *T. simulacrum*
- 8'. No well-defined continuous linear rim between postero-medial corners of mesostigmal plates and mid-dorsal carina (e.g. Fig. 9e) ..... 9
9. Tip of lig with a small secondary, recessed, ventro-apical semicircular lobe (Fig. 14c); upright middle portion of posterior lobe of pthx projecting beyond lateral portion (Fig. 9e); Rondônia State, Brazil (Fig. 37) ..... *T. leptocyclia*
- 9'. Tip of lig lacking a secondary, recessed, ventro-apical semicircular lobe (Figs 12f, 15b); posterior lobe of pthx evenly rounded (Fig. 9i), or with middle portion at same level as lateral portion (Fig. 9a) ..... 10
10. Latero-apical margin of lig not projected posteriorly (Fig. 15b); posterior lobe of pthx smoothly rounded, and lacking a more posterior recessed supplementary lobe (Fig. 9i); S Brazil (Fig. 35) ..... *T. vulcanoae*
- 10'. Latero-apical margin of lig projected posteriorly (Fig. 12f); posterior lobe of pthx with medial 0.33 differentiated from lateral portions, and with a more posterior recessed supplementary lobe (Fig. 9a); Venezuela (Fig. 36) ..... *T. bastiaani*
11. Rear of head mostly pale (as in Fig. 1d) ..... 12
- 11'. Dorsal 0.50 or more of rear of head black (as in Figs 1c, f) ..... 13
12. Tip of apical segment of lig decumbent, not broadened or inflated (Fig. 13n); large species (Hw > 20, abd > 32); Bolivia (Fig. 37) ..... *T. gigantea*
- 12'. Tip of apical segment of lig widened and rounded (Fig. 13i), smaller species (Hw < 20, abd < 30); Colombia (Fig. 39) ..... *T. farcimentum*
13. Tip of apical segment of lig upturned or swollen in lateral view (Figs 14i, m) ... 14
- 13'. Tip of apical segment of lig straight, foliate, undifferentiated in lateral view (Figs 12e; 13e, o; 14d) ..... 15
14. Apical segment of lig in dorsal view with sides converging and ending at slightly clubbed tip; well-developed chitinized round or denticulate tubercle at latero-basal angle of flexure (Fig. 14m); Venezuela (Fig. 39) ..... *T. selaopyge*
- 14'. Apical segment of lig in dorsal view with sides parallel and ending at transverse costate apical margin; chitinized denticulate tubercle at latero-basal angle of flexure absent (Fig. 14i); Venezuela, Peru, and W Brazil (Fig. 39) ..... *T. racenisi*
15. Basal segment of lig without shaft hairs; inner fold small, extending ca 0.25 of apical segment length (Fig. 12e); larger species (Hw > 20, abd > 28); pale color of abd dorsum orange; Costa Rica (Fig. 36) ..... *T. aurea*
- 15'. Basal segment of lig with shaft hairs; inner fold well developed, extending ca 0.50 of apical segment length (Figs 13e, o; 14d); smaller species (Hw < 16, abd < 27); pale color of abd dorsum red (Pls Ib, Iib); Mexico south through S Brazil, and N Argentina (Fig. 32) ..... *T. digiticollis*, *T. griffinii*, *T. levis*

**Key to females of *Telebasis***

(adapted from Bick & Bick 1996, Westfall & May 2006; females of *T. erythrina*, *T. leptocyclus*, and *T. versicolor* unknown)

1. Mesepisternal pits lateral to mid-dorsal carina present (Figs 5h, i; 6a, b, m; 7f, h, o, q; 8c, d, g, h) ..... **Key F-1**
- 1'. No mesepisternal pits lateral to mid-dorsal carina (Figs 5d-g, j-r; 6c-l, n, q; 7a-e, i-n, r; 8a, b, e, f, i) ..... 2
2. Ovipositor extending beyond S10; a supplementary transverse carina on S10 (Fig. 26d) ..... **Key F-2**
- 2'. Ovipositor not extending beyond S10; dorsum of S10 without a supplementary transverse carina (e.g. Fig. 26c) ..... 3
3. Anterior 0.50 of thx black except for narrow pale stripe along humeral suture; a linear black branch at dorsal 0.50 or more of metepisternum (Fig. 4n); Greater Antilles ..... **Key F-3**
- 3'. Black areas occupying less than 0.50 of anterior portion of thx; metepisternum largely unmarked (Fig. 4c) ..... 4
4. Posterior portion of mesepisternal black stripe with a distinct lateral projection at dorsal 0.25 (Fig. 4l); USA south through Venezuela ..... **Key F-4**
- 4'. Posterior portion of mesepisternal black stripe, if present, linear ..... 5
5. Prothoracic horns absent (Figs 5f; 6d, e, h, n; 7a-c, j, k, n, q) or minute, rudimentary and difficult to detect (Figs 5g, j, m; 7r) ..... **Key F-5**
- 5'. Prothoracic horns evident, extending anteriorly from posterior lobe (Figs 5d, e, l, n-r; 6c, f, i, k, l; 7d, h, k, l, r, s; 8e, f) ..... 6
6. Mid-dorsal carina pale (as in Fig. 4i) ..... **Key F-6**
- 6'. Mid-dorsal carina dark (as in Fig. 4k) ..... **Key F-7**

**Key F-1 (mesepisternal pits present)**

1. Rear of head with at least dorsal 0.50 black (as in Fig. 1c, f) ..... 2
- 1'. Rear of head entirely pale (as in Fig. 1d) ..... 4
2. Anterior margin of mid-dorsal thoracic carina forming an abrupt, narrow, raised semicircular tubercle whose sides form a sinus visible in lateral view (Fig. 6b); S Mexico through Honduras (Fig. 33) ..... *T. collopistes*
- 2'. Anterior margin of mid-dorsal thoracic carina, though abruptly narrowed, forming a sinus not visible in lateral view (Figs 6m; 8h); South America ..... 3
3. Thorax and abd blue, smaller species (Hw < 17, abd < 28); posterior border of mesostigmal plate continuous with posterior border of interlaminal sinus (Figs 8g, h); Colombia and Venezuela (Fig. 35) ..... *T. williamsoni*
- 3'. Thorax and abd orange or red, larger species (Hw > 20, abd > 31); posterior border of mesostigmal plate discontinuous with posterior border of interlaminal sinus (Fig. 6m); Colombia and Venezuela (Fig. 38) ..... *T. garrisoni*

4. Anterior portion of mid-dorsal carina nearly obsolete so that pair of mesepisternal sinuses appears as one; posterior margin of inter-laminal sinus transverse (Figs 7o, q) and separated from mid-dorsal carina; W Brazil, Bolivia, and NE Argentina (Fig. 35) ..... *T. simulacrum*
- 4' Anterior portion of mid-dorsal carina well-developed, separating pair of mesepisternal sinuses; posterior margin of interlaminal sinus joining mid-dorsal carina medially (Figs 5h, i; 7f, h; 8c, d); Belize south to N Argentina ..... 5
5. Mesepisternal pits large, conspicuous, ca twice as long as wide (Figs 7f, h); posterior lobe of pthx broadly bluntly angulate laterally (Figs 7g, h); Ecuador and N Brazil south to Bolivia and N Argentina (Fig. 35) ..... *T. obsoleta*
- 5' Mesepisternal pits smaller, ca circular (Figs 5h, i; 8c, d); posterior lobe of pthx broadly rounded laterally (Fig. 8h); Belize and Brazil ..... 6
6. Postero-distal margin of interlaminal sinus not swollen, continuous with posterior margin of mesostigmal plate (Figs 5h, i); body largely orange; S Mexico and Belize (Fig. 33) ..... *T. boomsmae*
- 6' Postero-distal margin of interlaminal sinus swollen, differentiated from postero-medial margin of mesostigmal plate (Figs 8g, h); body largely blue; Ecuador and N Brazil south to Bolivia and N Argentina (Fig. 35) ..... *T. vulcanosae*

**Key F-2** (ovipositor extending beyond S10 and a supplementary transverse carina on S10; Fig. 26d)

1. Medial portion of posterior margin of mesostigmal plate forming a strongly elevated glabrous lobe easily visible in lateral or medio-lateral view; mesepisternum immediately posterior to mesostigmal plate unmodified (Fig. 6j); Mexico south through SE Brazil and NE Argentina (Fig. 34) ..... *T. filiola*
- 1' Medial portion of posterior margin of mesostigmal plate not or but slightly raised and gently convex anteriorly; mesepisternum immediately posterior to mesostigmal plate modified into a sinus (Figs 6q; 8i) ..... 2
2. Medial portion of posterior margin of mesostigmal plate raised, higher than distal portion of plate and forming a prominent convex cup-like rim for mesepisternal sinus (Fig. 8i); SE Brazil, Bolivia, and Argentina (Fig. 34) .... *T. willinki*
- 2' Medial portion of posterior margin of mesostigmal plate not higher than distal portion of mesostigmal plate, forming an evenly convex curve anterior to large mesepisternal sinus (Fig. 6q); Ecuador, Peru, Bolivia, S Brazil, and NW Argentina (Fig. 34) ..... *T. inalata*

**Key F-3** (anterior 0.50 of thx black except for narrow pale stripe along humeral suture; a linear black branch at dorsal 0.50 or more of metepisternum; as in Fig. 4n)

1. Prothoracic horns large, raised, extending for 0.50 or more of middle prothoracic lobe length (Fig. 8e); Puerto Rico and Hispaniola (Fig. 30) ..... *T. vulnerata*
- 1' Prothoracic horns vestigial (Fig. 6g); Greater Antilles (Fig. 30) ... *T. dominicana*

**Key F-4** (posterior portion of mesepisternal black stripe with a distinct lateral projection at dorsal 0.25; as in Fig. 4l)

1. Prothoracic horns obvious, extending anteriorly from posterior lobe with distal part of horns elevated above middle lobe of pthx (Fig. 7l); W USA south through Colombia and Venezuela (Fig. 29) ..... *T. salva*
- 1'. Prothoracic horns vestigial (Fig. 7a) or absent (Fig. 5k) ..... 2
2. Prothoracic horns vestigial, in the form of a paired set of anteriorly directed tubercles (Fig. 7a); Baja California, Mexico (Fig. 29) ..... *T. incolumis*
- 2'. Prothoracic horns absent (Fig. 5k) southeastern USA (Fig. 29) ..... *T. byersi*

**Key F-5** (prothoracic horns absent or minute, rudimentary, and difficult to detect)

1. Posterior lobe of pthx with a pair of medio-lateral tubercles (Figs 5j; 6d; 7n) or with a vestigial pair of anteriorly directed horns which extend at most over basal 0.25 of prothoracic middle lobe (Figs 5g, m; 7r) ..... 2
- 1'. Posterior lobe of pthx lacking medio-lateral tubercles (Figs 5f; 6e, h, n; 7b, c, j, k) ..... 7
2. Posterior lobe of pthx with a pair of medio-lateral tubercles (Figs 5j; 6d; 7n) .. 3
- 2'. Posterior lobe of pthx with a vestigial pair of anteriorly directed horns which extend at most over basal 0.25 of prothoracic middle lobe (Figs 5g, m; 7r) ... 5
3. Epicranium, rear of head, and mid-dorsal carina pale (Figs 4f, g); postero-medial margin of mesostigmal plate with medial portion not glabrous (Fig. 5j), and postero-distal margin evenly raised; Ecuador (Fig. 31) ..... *T. brevis* (in part)
- 3'. Epicranium, rear of head, and mid-dorsal carina black (similar to Figs 2d; 4k); postero-medial margin of mesostigmal plate forming a prominent black glabrous lobe (Fig. 7n) or postero-distal margin of mesostigmal plate raised (Fig. 6d); Venezuela, Peru, and Bolivia ..... 4
4. Postero-medial margin of mesostigmal plate lacking a prominent black glabrous lobe, postero-distal margin of mesostigmal plate raised; isolated prothoracic tubercles prominent, as high as wide, their tips as high as hind margin of pthx (Fig. 6d); larger species (Hw 19, abd 29); Peru and Bolivia (Fig. 42) ... *T. corbeti*
- 4'. Postero-medial margin of mesostigmal plate forming a prominent black glabrous lobe, postero-distal margin of mesostigmal plate not raised; isolated prothoracic tubercles less prominent, wider than high, their tips not as high as hind margin of pthx (Fig. 7n); smaller species (Hw 16-17, abd 25-27); Venezuela (Fig. 39) ..... *T. selaopyge*
5. Rear of head and mid-dorsal carina pale (Fig. 1d, as in Fig. 4i); prothoracic horns robust, broad at base, apices divergent directed externally (Fig. 5m); SE Brazil, Paraguay, Bolivia, and N Argentina (Fig. 41) ..... *T. carmesina* (in part)
- 5'. At least dorsal portion of rear of head dark (as in Figs 1c, f), mid-dorsal carina black (as in Figs 4e, h); prothoracic horns thumb-like, apices directed anteriorly (Figs 5g; 7r) ..... 6

6. Lateral portions of prothoracic posterior lobe curved anteriorly but continuous with medial portion of posterior lobe; area postero-lateral to mesostigmal plate unmodified (Fig. 5g); black on rear of head extending ventrally to genae (as in Fig. 1c); humeral suture black (as in Fig. 4e); Ecuador and Peru (Fig. 37) ..... *T. bickorum*
- 6'. Lateral portions of prothoracic posterior lobe erect with medial ends separated from posteriorly directed decumbent medial portion of posterior lobe; an elongate furrow postero-lateral to mesostigmal plate (Fig. 7r); rear of head with black restricted to dorsal 0.50 (Fig. 1f); humeral suture pale (as in Fig. 4i); Trinidad to N Brazil (Fig. 41) ..... *T. simulata*
7. Posterior margin of mesostigmal plate with a laterally directed tubercle (tu, Fig. 6e); Trinidad, Guyanas south through Peru and N South America (Fig. 36) ..... *T. demarara*
- 7'. Posterior margin of mesostigmal plate entire (Figs 5f; 6h, n; 7b, c, j, k, n) ... 8
8. Lateral margin of posterior lobe of pthx angulate, forming an acute angle at junction with middle lobe (an, Fig. 6h); Ecuador, Peru, and Bolivia (Fig. 37) ..... *T. dunklei*
- 8'. Lateral margin of posterior lobe of pthx smoothly convex, forming a right or obtuse angle at junction with middle lobe (Figs 5f; 6n; 7b, c, j, k) ..... 9
9. Mid-dorsal carina pale (as in Fig. 4i); lateral 0.30 of posterior lobe of pthx erect and discontinuous with decumbent medial portion (Figs 7b, j) ..... 10
- 9'. Mid-dorsal carina dark (as in Fig. 4d); lateral margins of posterior lobe of pthx continuous with medial portion (Figs 5f; 6n; 7c, k) ..... 12
10. Epicranium with some black (similar to Fig. 2f), rear of head with dorsal 0.50 black (as in Fig. 1f); mesepisternum entirely pale; Venezuela, Peru, and W Brazil (Fig. 39) ..... *T. racenisi*
- 10'. Epicranium (sometimes with small black area surrounding lateral ocelli) and rear of head pale; a narrow dark stripe on mesepisternum lateral to mid-dorsal carina (as in Fig. 4f); Mexico south through Colombia, Ecuador, and Venezuela ... 11
11. Erect lateral portion of prothoracic posterior lobe forming a semicircular wing (Fig. 5j); middle lobe of pthx without a depression on each side; Ecuador (Fig. 31) ..... *T. brevis* (in part)
- 11'. Erect lateral portion of prothoracic posterior lobe forming a broadly oval wing (Fig. 7b); middle lobe of pthx with a depression on each side; Mexico south through Colombia, and Venezuela (Fig. 31) ..... *T. isthmica*
12. A medial supplementary transverse rim on posterior lobe of pthx anterior to hind margin (Figs 5f; 7k) ..... 13
- 12'. No supplementary transverse rim on posterior lobe of pthx anterior to hind margin (Figs 6n; 7c,) ..... 14
13. Lateral portions of posterior prothoracic lobe separated from small, posteriorly directed medial portion (Fig. 5f); dark mid-dorsal stripe a mere hairline, remainder of mesepisternum pale except for dark fossa immediately posterior to mesostigmal plate (Fig. 4d); Venezuela (Fig. 36) ..... *T. bastiaani*

- 13'. Lateral portions of posterior prothoracic lobe continuous with medial portion (Fig. 7k); dark mid-dorsal stripe wide, occupying 0.30 of mesepisternum and connecting with elongate diagonal dark spot extending from fossa posterior to mesothoracic plate to just before mesanapleural suture; Venezuela south through Brazil, Peru, and Bolivia (Fig. 37) ..... *T. rubricauda*
14. Epicranium pale except for black along epicranial furrow and ocellar crown (as in Fig. 2c), rear of head pale (as in Fig. 1d); dark mid-dorsal stripe a mere hair-line (as in Fig. 4d), remainder of mesepisternum pale; larger species (Hw 22-23, abd 35-36); Bolivia (Fig. 37) ..... *T. gigantea*
- 14'. Epicranium and rear of head mostly black (as in Figs 1f; 2d); dark mid-dorsal stripe wide, occupying 0.40 or more of mesepisternum (as in Fig. 4k); smaller species (Hw 16-20, abd 24-29); Mexico south through Costa Rica (Fig. 32) ....  
..... *T. levis*

**Key F-6** (prothoracic horns obvious, extending anteriorly from posterior lobe, and mid-dorsal carina pale)

1. Antero-distal corner of mesepisternum swollen and with a conspicuous anteriorly directed thumb-like process (Fig. 6c) or prominent glabrous swelling (Figs 5p; 7i) ..... 2
- 1'. Antero-distal corner of mesepisternum not swollen and with no conspicuous anteriorly directed thumb-like process or swelling (Figs 5n, l; 6i; 7m, 8a) ... 4
2. Antero-distal corner of mesepisternum swollen and with a conspicuous anteriorly directed thumb-like process (Fig. 6c); Lesser Antilles, Cuba, and Costa Rica south through Brazil (Fig. 40) ..... *T. corallina*
- 2'. Antero-distal corner of mesepisternum with a prominent glabrous swelling (Figs 5p; 7i); Brazil ..... 3
3. Dorsal 0.50 of rear of head black (as in Fig. 1f); posterior lobe of pthx with lateral 0.33 erect and separated medially by a distance ca as wide as each lateral portion from medial portion, lacking a small gap at mid-width of posterior margin; antero-distal corner of mesepisternum with a prominent black glabrous swelling (Fig. 5p); Pará, Brazil (Fig. 41) ..... *T. carvalhoi*
- 3'. Rear of head pale except for small lateral black spot (Fig. 1e); posterior lobe of pthx not differentiated into medial and lateral portions, with a small gap at mid-width of posterior margin; antero-distal corner of mesepisternum with a prominent pale glabrous swelling (Fig. 7i); Minas Gerais, Brazil (Fig. 41) .. *T. paraensei*
4. Wings flavescent, hind margin of mesostigmal lobe prominent, erect vertically; broadly shallow depression immediately posterior to hind lobe of mesostigmal plate (Figs 8a, b); SE Brazil and N Argentina (Fig. 43) ..... *T. theodori*
- 4'. Wings hyaline, hind margin of mesostigmal lobe only slightly raised, not forming an erect lobe; mesepisternal depression, if present, small and located antero-laterally above mesanapleural suture and laterally to mesostigmal plate (Figs 5l, n; 6i; 7m) ..... 5

5. Prothoracic horns long, extending over 0.50 of middle lobe, almost reaching central pit of pthx (Fig. 7m); epicranium with orange postocular spots (Fig. 2e); S Brazil to Bolivia (Fig. 41) ..... *T. sanguinalis*
- 5'. Prothoracic horns short, extending over 0.30 of middle lobe and not reaching central pit of pthx (Figs 5l, n); epicranium largely black, pale postocular spots absent (as in Figs 2d, f) ..... 6
6. Prothoracic horns small [vestigial in at least one female, see Key F-5], often finger-like, apices divergent from base; a small but conspicuous isolated black oval mesepisternal depression above anterior margin of mesanapleural suture (Fig. 5l); SE Brazil, Paraguay, Bolivia, and N Argentina (Fig. 41) ... *T. carmesina* (in part)
- 6'. Prothoracic horns prominent, flattened, apices parallel to slightly divergent from base; antero-lateral area of mesepisternum above anterior margin of mesanapleural suture unmodified (Figs 5n; 6i); Colombia, Guyanas south through Paraguay ..... 7
7. Posterior margin of mesostigmal plate erect only along distal 0.50 of plate (Fig. 5n), smaller species (Hw  $\leq$  13, abd  $\leq$  20); Guyanas south through Paraguay (Fig. 40) ..... *T. carminita*
- 7'. Posterior margin of mesostigmal plate erect along entire length and with middle 0.30 of rim curled posteriorly (Fig. 6i), larger species (Hw  $\geq$  28, abd  $\geq$  27); Colombia (Fig. 39) ..... *T. farcimentum*

**Key F-7** (prothoracic horns obvious, extending anteriorly from posterior lobe, and mid-dorsal carina dark)

1. Rear of head mostly pale (as in Figs 1d, e) ..... 2
- 1'. Rear of head mostly dark, at least on dorsal 0.50 (as in Fig. 1f) ..... 3
2. Postero-medial border of mesostigmal plate unmodified; mesepisternum with an upright tubercle just posterior to mesostigmal plate; posterior lobe of pthx with medial portion decumbent and lateral portions erect (Fig. 7e); larger species (Hw > 17, abd > 27); Peru (Fig. 42) ..... *T. milleri*
- 2'. Postero-medial border of mesostigmal plate with an erect spatulate process; mesepisternum lacking a tubercle just posterior to mesostigmal plate; posterior lobe of pthx not differentiated into separate medial and lateral portions (Figs 5q, r); smaller species (Hw < 16, abd < 19); Brazil and Paraguay (Fig. 38) ... *T. coccinea*
3. Posterior 0.50 of mesepimeron with a broad dark stripe connecting with obsolete interpleural suture (Fig. 4c); an anteriorly directed auricle-like structure immediately posterior to mesostigmal plate (Fig. 5e); Costa Rica (Fig. 36) ... *T. aurea*
- 3'. Mesepimeron unmarked with only a small dark spot ventral to obsolete interpleural suture (Fig. as in 4k); no anteriorly directed auricle-like structure immediately posterior to mesostigmal plate (Figs 5d; 6f, l; 7c, d; 8f), except in *T. carota* (Fig. 5o) and *T. flammeola* (Fig. 6k) ..... 4



4. Medio-basal portion of mesostigmal plate with a black, glabrous tubercle (Fig. 5o); Colombia, Ecuador, Bolivia ..... *T. carota*
- 4'. Medio-basal portion of mesostigmal plate unmodified (Figs 5d; 6f, l; 7c, d), or raised (Fig. 8f); mesepisternum posterior to mesostigmal plate unmodified (Fig. 5d), with a depression (Figs 6f, l, p; 7d, 8f), or with an elevated auricle (Fig. 6k) ..... 5
5. Medio-basal portion of mesepisternum with a strongly elevated auricle with an antero-laterally directed concavity (Fig. 6k); Ecuador (Fig. 31) ..... *T. flammeola*
- 5'. Medio-basal portion of mesepisternum unmodified (Fig. 5d) or with a fossa (Figs 6f, l, p; 7d, 8f) ..... 6
6. Prothoracic horns stout, apically rounded, reaching almost to anterior margin of middle lobe, and appressed to middle lobe (Figs 5d; 7d) ..... 7
- 6'. Prothoracic horns more slender or spatulate, reaching 0.50 or less of middle lobe length, and apically elevated above middle lobe of pthx (Figs 6f, l, o, p; 8f) .... 8
7. Prothoracic horns slightly divergent; mesepisternum with a depression posterior to mesostigmal plate (Fig. 7d); Ecuador, Peru, and Bolivia (Fig. 38) ... *T. livida*
- 7'. Prothoracic horns parallel; mesepisternum unmodified posterior to mesostigmal plate (Fig. 5d); Rondônia State, Brazil (Fig. 38) ..... *T. abuna*
8. Larger species (Hw  $\geq 22$ , abd  $\geq 32$ ); an additional smaller triangular concavity (tc, Fig. 6l) posterior to transverse depression adjacent to mesostigmal plate; Costa Rica, Colombia, and Ecuador (Fig. 36) ..... *T. garleppi*
- 8'. Smaller species (Hw  $\leq 20$ , abd  $\leq 29$ ); no additional concavity posterior to broadly triangular transverse depression adjacent to mesostigmal plate (Figs 6f, p; 8f) ..... 9
9. Middle and posterior lobes of pthx pale; medio-basal portion of mesostigmal plate strongly elevated, higher than distal portion (Fig. 8f); Peru (Fig. 42) ..... *T. watsoni*
- 9'. At least middle lobe of pthx with some black or brown; medio-basal portion of mesostigmal plate raised forming a rim but this structure not more elevated than distal portion (Figs 6f, p) ..... 10
10. Dorsal surface of middle prothoracic lobe almost entirely black (sometimes restricted to an isolated dorso-lateral black spot); erect lateral portions of posterior lobe of pthx continuous with medial portion of posterior lobe (Fig. 6f); E Mexico to N Panama (Fig. 32) ..... *T. digiticollis*
- 10'. Dorsal surface of middle prothoracic lobe mostly brown; erect lateral portions of posterior lobe of pthx usually separated from medial portion of posterior lobe (Figs 6o, p); Costa Rica south through São Paulo, Brazil, and N Argentina (Fig. 32) ..... *T. griffinii*

## *Telebasis abuna* Bick & Bick, 1995

Figs 5d (♀ pthx); 12d (lig); 16d; 20e; 25a (app); 38 (map)

*Telebasis abuna* Bick & Bick, 1995: 18 (holotype ♂, allotype ♀, Brazil, Rondônia (Mato Grosso on envelope), Abuna, 15 iii 1922, leg. J.H. Williamson, J.H. Strohm, in UMMZ); — Garrison et al. (2003: 25; type catalog UMMZ).

### Specimens examined

Holotype ♂, allotype ♀ (UMMZ).

### Diagnosis

Male appendages (Figs 16d; 20e) are almost identical to those of *T. coccinea* (Figs 16o, p; 20p, q) but the tip of the cercus in dorsal view is more attenuate (Figs 25a, f, g). Although Bick & Bick (1995: 19) state that the cercus of *T. coccinata* Calvert (= *T. coccinea*) lacks a ventral tooth at mid-length, it does have a ventral tooth. Rear of head of *T. abuna* is black (pale in *T. coccinea*), and the simple genital ligula (Fig. 12d) lacks the small posteriorly projecting lateral lobes found in *T. coccinea* (Figs 12o, p). Females approach *T. livida* in prothoracic morphology but the prothoracic horns in *T. abuna* are narrower and parallel-sided (Fig. 5d; broader and slightly divergent from base in *T. livida*, Fig. 7d) and the anterior margin of the mesepisternum behind the mesostigmal plate is unmodified (an oval depression behind medial 0.50 of mesostigmal plate in *T. livida*).

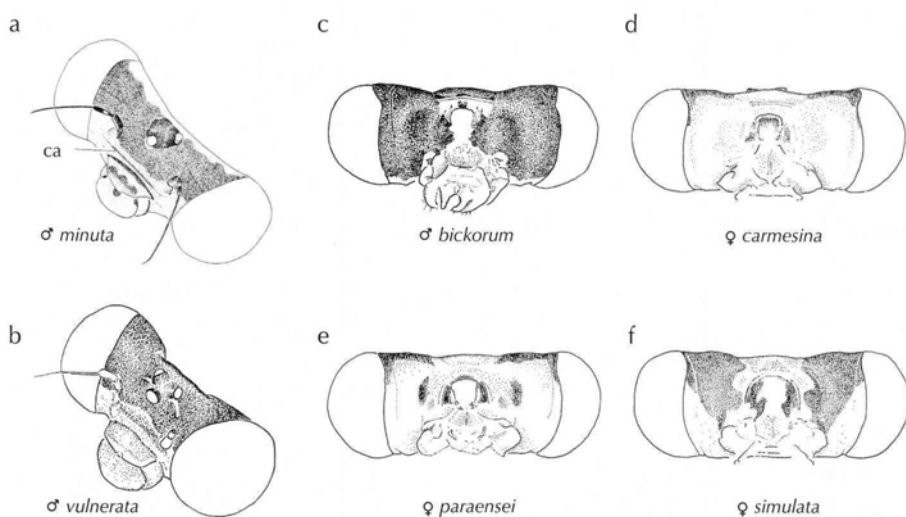


Figure 1: Head — (a) *Nehalennia minuta* (Selys in Sagra, 1857), Panama, Cerro Azul (NVE); (b) *Telebasis vulnerata*, Dominican Republic, NE of Jarabacoa; (c) *T. bickorum*, paratype, Bolivia, S of Buena Vista; (d) *T. carmesina*, Brazil, Nova Teutonia; (e) *T. paraensei*, Brazil, Serra da Saudade; (f) *T. simulata*, Brazil, Manaus — (a, b) medio-dorsal view; (c-f) posterior view; ca: carina.

## Remarks

Male appendages of holotype in lateral view illustrated by Bick & Bick (1995) and reproduced by Heckman (2008) imply that the mid-ventral tooth is part of the outer margin of the cercus; however, the tooth is medially placed and is visible in lateral view as shown in Figure 16d.

## Distribution

Known only from type locality (Fig. 38).

*Telebasis aurea* May, 1992

Figs 4c (♀ thx); 5e (♀ pthx); 12e (lig); 16e; 20f (app); 36 (map)

*Telebasis aurea* May, 1992: 162 (holotype ♂, allotype ♀, Costa Rica, Puntarenas, Península de Osa, pond 8 km S Rincón, 10 viii 1970, leg. MLM, in FSCA); — Bick & Bick (1995: 19; diagnosis of male); — Bick & Bick (1996: 4; description of female).

## Specimens examined

Costa Rica, Puntarenas Province: 3 ♂, 1 ♀, marshy pond 8 km S San Vito (08°46'S, 82°56'W), 27 iv 1967, leg. DRP, M.L. Paulson (RWG); 1 ♂, 1 ♀, same data (TWD); 1 ♂, 1 ♀, vicinity of Rincón de Osa, 19 iii 1967, leg. DRP, M.L. Paulson (RWG).

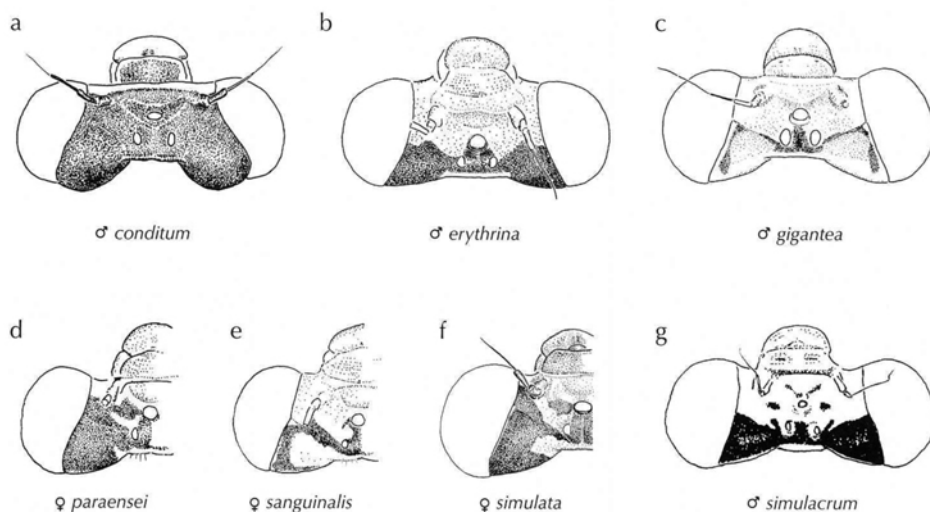


Figure 2: Head, dorsal view — (a) *Chromagrion conditum*, USA, Tucker (RWG); (b) *Telebasis erythrina*, Brazil, Peti; (c) *T. gigantea*, Bolivia, S of Buena Vista; (d) *T. paraensei*, Brazil, Coronel Fabriciano; (e) *T. sanguinalis*, Bolivia, Velasco; (f) *T. simulata*, Brazil, Manaus; (g) *T. simulacrum*, lectotype, Brazil, Cuiaba.

## Diagnosis

Large size (Hw > 20, abd > 33), flavescent wings, unique golden orange coloration of abdomen, and thoracic pattern (as in Fig. 4c) outlined in the papers cited above allow for easy recognition of males. The relatively unmodified spatulate genital ligula lacks any accessory lobes, its inner fold is small, and there is a chitinated round or denticulate tubercle at each latero-basal angle of flexure (Fig. 12e). By genital ligula morphology, the species approaches *T. dunklei* (Fig. 13g) and to a lesser extent, *T. digiticollis* (Fig. 13e), *T. levis* (Fig. 14d), and *T. griffinii* (Fig. 13o). In females, the broad dark stripe on posterior 0.50 of mesepimeron connecting with dorsal end of obsolete interpleural suture (Fig. 4c), and the anteriorly directed auricle-like structure immediately posterior to mesostigmal plate (Fig. 5e) easily diagnose this species.

## Distribution

SE Costa Rica (Fig. 36).

## Biology

Description of type locality and habits are given by May (1992).

### *Telebasis bastiaani* Bick & Bick, 1996

Figs 4d (♂ thx); 5f (♀ pthx); 9a (♂ pthx); 12f (lig); 16f; 20g; 25b (app); 36 (map)

*Telebasis bastiaani* Bick & Bick, 1996: 4 (holotype ♂, Venezuela, Apuré State, de Mantecal, 20 viii 1983, leg. J. De Marmels; allotype ♀ Venezuela, Barinas State, San Silvestre, 23 xii 1957, leg. J.J. Rácenis, both in MIZA).

## Specimens examined

Venezuela, Apuré State: 1 ♂ paratype, W of Montecal [sic Mantecal?], 18 viii 1983, leg. J. De Marmels; Guarico State: 1 ♀ paratype, Coroza Pando (8°31'S, 67°34'W) (all RWG).

## Diagnosis

This species was well described and diagnosed by Bick & Bick (1996) but they provided no diagnostic illustrations nor did they compare it with blue species formally included in *Helveciagrion*. The illustrations of the appendages (Figs 16f; 20g; 25b) and female prothorax (Fig. 5f) I provide here will allow for easy discrimination from the only other all-blue species of *Telebasis*: *T. demarara* (Figs 6e; 17d; 21b) and *T. dunklei* (Figs 6h; 17g; 21e). *T. bastiaani* also superficially resembles *T. leptocyclia*, *T. obsoleta*, *T. simulacrum*, *T. vulcanoae*, and *T. williamsoni* but the isolated black spot on the dorsal end of the obsolete interpleural suture which occurs in them (as in Fig. 28) is lacking in *T. bastiaani* (Fig. 4d). The approximate condition of male cerci and presence of mesepisternal pits in *T. obsoleta* (Figs 7f, h; 18g; 25p), *T. simulacrum* (Figs 7o, q; 18n, o; 25q, r), *T. vulcanoae* (Figs 8c, d; 19d; 25v), and *T. williamsoni* (Figs 8g, h; 19g; 25w), and unique appendage morphology in *T. leptocyclia* (Figs 18b; 21q) will further allow for separation from *T. bastiaani*. The clubbed-shaped genital ligula (Fig. 12f) lacks a lateral lobe and is similar to *T. digiticollis* (Fig. 13e), *T. griffinii* (Fig. 13o), and *T. levis* (Fig. 14d).

## Remarks

Width of mid-dorsal black stripe is variable ranging from a thin hairline as in holotype and paratype I examined (Fig. 4d) to almost covering the entire mesepisternum.

## Distribution

Apur , Barinas, Guarico, and Portuguesa States, Venezuela (Fig. 36).

*Telebasis bickorum* Daigle, 2002

Figs 1c (  head); 4e (  thx); 5g (  pthx); 12g (lig); 16g; 20h (app); 37 (map)

*Telebasis bickorum* Daigle, 2002b: 177 (holotype  , allotype  , Bolivia, Santa Cruz Department, Ichilo Province, Lagunas Curichi ca 3.5 km S of Buena Vista, 12 ii 2001, leg. JJD, in FSCA).

## Specimens examined

Ecuador, Sucumb os Province: 1  , Limoncocha, palm swamp, 25 vii 1977, leg. DRP (DRP). Bolivia, Santa Cruz Department, Ichilo Province: 1   paratype, 1   paratype, Lagunas Curichi about 3.5 km S of Buena Vista, 09 ii 2001, leg. JJD (JJD; RWG).

## Diagnosis

The appendages of this small species (Figs 16g; 20h) superficially resemble those of the poorly known *T. erythrina* (Figs 17h; 21f; 25k) but the morphology of the genital ligula (Fig. 12g) and thoracic pattern (Fig. 4e) distinguish it from *T. erythrina* (Figs 4i; 13h) and all other species. The small, poorly developed horns of prothorax (Fig. 5g) and extensive black thoracic coloration (as in fig. 4e) of female will separate this species from all others.

## Remarks

The male from Ecuador differs from those from Bolivia by its slightly amber wings.

## Distribution

Bolivia and Ecuador (Fig. 37).

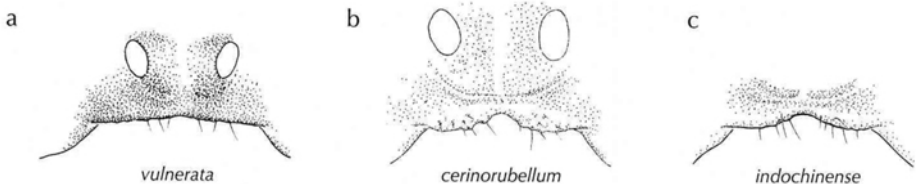


Figure 3: Male occiput, dorsal view — (a) *Telebasis vulnerata*, Dominican Republic, NE of Jarabacoa; (b) *Ceriagrion cerinorubellum*, Thailand, Chayaphum Province, Salaphrom Forest (RWG); (c) *C. indochinense*, Thailand, Lampang Province, Mae Tha Reservoir (RWG).

## Biology

Daigle (2002b) records this species as sitting on mats of *Azolla* sp. and *Lemna* sp. in shaded forest pools; F. Lencioni (pers. comm.) found them perching on tips of tree leaves at about 3 m inside a forest in Bolivia.

### *Telebasis boomsmae* Garrison, 1994

Figs 5h, i (♀ pthx); 12h (lig); 16h; 20i; 24a; 25c (app); 33 (map)

*Telebasis boomsmae* Garrison, 1994: 277 (holotype ♂, allotype ♀, Belize, Orange Walk District, Gallon Jug, 15 x 1992, leg. T. Boomsma, in USNM).

## Specimens examined

Holotype ♂, allotype ♀ (USNM). Other specimens: Belize, Cayo District: 1 ♂, aguada at Caracol, 15 x 1992; 1 ♂, same but 15 x 1993; 1 ♂, 1 ♀, Retiro, Chiclero camp ca 5 km S Caracol, 18 x 1993; Orange walk District: 1 ♀, Gallon Jug, 06 v 1993; 1 ♀, same but 07 v 1993; 1 ♂, same but 08 v 1993; 1 ♂, 1 ♀, same but 15 x 1993 (all leg. T. Boomsma in RWG).

## Diagnosis

*T. boomsmae* is similar in appendage morphology (Figs 16h; 20i; 24a; 25c) and in genital ligula structure (Fig. 12h) to *T. garrisoni* (Figs 13m; 17m; 21k; 24c; 25m) and *T. collopistes* (Figs 13a; 17a; 20r; 24b; 25h) and is distinguished from them by its pale rear of head, black in the latter two species. Female has mesepisternal pits (Figs 5h, i) and is diagnosed in Key F-1.

## Distribution

Tabasco State, S Mexico, and Belize (Fig. 33).

## Biology

A pond species as recorded by Garrison (1994).

### *Telebasis brevis* Bick & Bick, 1995

Cover photograph (♂); Figs 4f, g (♂ thx); 5j (♀ pthx); 9b (♂ pthx); 12i (lig); 16i; 20j; 25d (app); 31 (map)

*Telebasis brevis* Bick & Bick, 1995: 20 (holotype ♂, allotype ♀, Ecuador, Pichincha Province, Tinalandia, 12 km E Santo Domingo de los Colorados, 06 x 1988, leg. SW, in IORI).

## Specimens examined

Ecuador, Manabi Province: 3 ♂, Cojimies, 21 iv 1947, leg. W. Clarke-MacIntyre; 2 ♂, same but 23 iv 1947; 2 ♂, same but 24 iv 1947; 1 ♂, 1 ♀, same but 02 ix 1948 (all RWG); Guayas Province: 1 ♂, 1 ♀, Guayaquil (Simón Bolívar) Airport, 27 ii 1973,

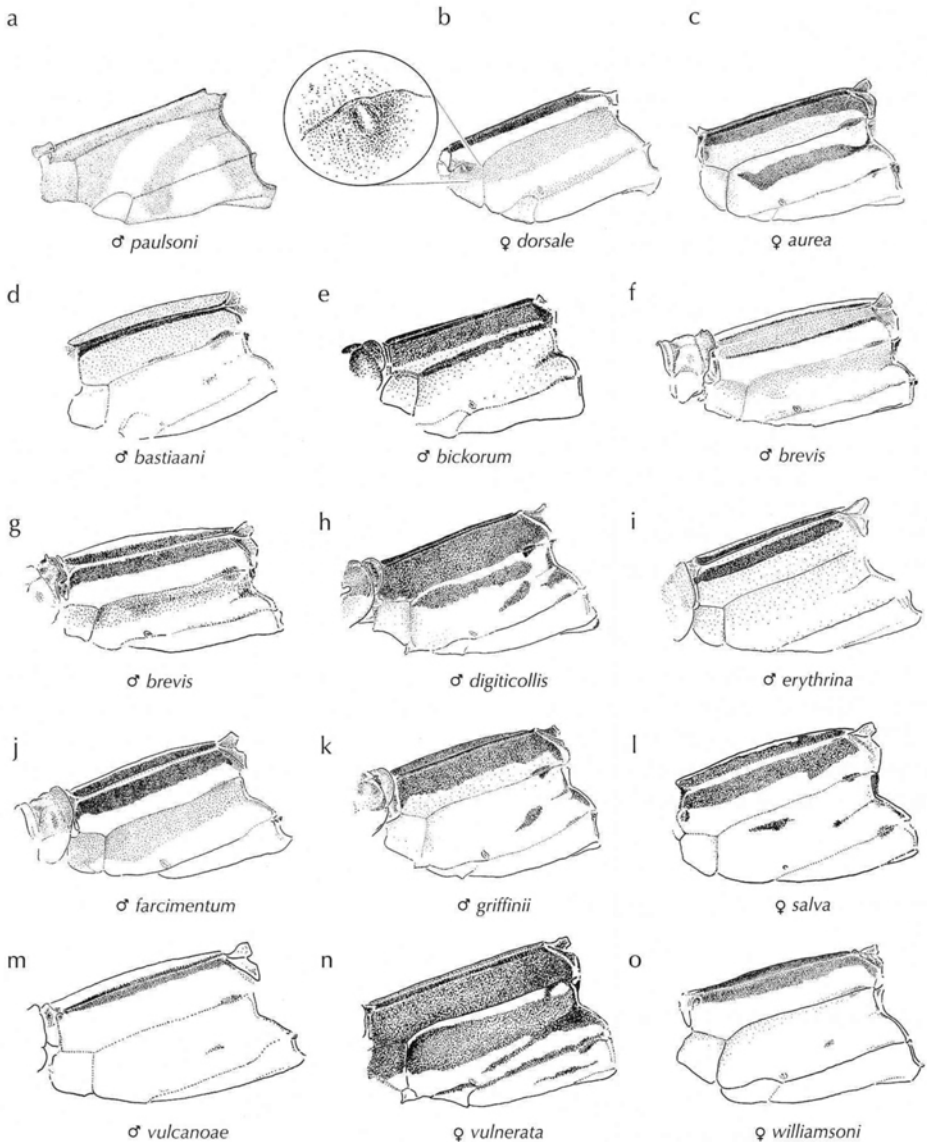


Figure 4: Thorax, lateral and dorso-lateral views — (a) *Phoenicagrion paulsoni*, holotype, Peru, Río Napo (UMMZ); (b) *Aeolagrion dorsale*, Trinidad, St. Andrew; insert: detail of mesanapleural suture (RWG); (c) *Telebasis aurea*, Costa Rica, S of San Vito; (d) *T. bastiaani*, paratype, Venezuela, W of Mantecal; (e) *T. bickorum*, paratype, Bolivia, S of Buena Vista; (f) *T. brevis*, Ecuador, Babahoyo; (g) *T. brevis*, Ecuador, Guayaquil; (h) *T. digiticollis*, Mexico, Agua Caliente; (i) *T. erythrina*, Brazil, Peti; (j) *T. farcimentum*, holotype, Colombia, Cali; (k) *T. griffinii*, Ecuador, La Selva; (l) *T. salva*, Mexico, Guatusco; (m) *T. vulcanoae*, Brazil, Bahia; (n) *T. vulnerata*, Dominican Republic, La Vega; (o) *T. williamsoni*, paratype, Colombia, El Banco. Figure 4a by NVE.

leg. M. Deyrup (TWD); de los Rios Province: 1 ♂, swamp at Babahoyo, 21 vi 1975, leg. J. Cohen, A. Langley, P. Monnig (RWG); El Oro Province: 1 ♂, Victoria-Arenillas, 18-19 viii 1977 (CC); Pichincha Province: 1 ♂, Tinalandia, 12 km E Santo Domingo de los Colorados, streams south of river, 06 x 1988, leg. SWD (RWG).

### Diagnosis

This long, slender, pale species is similar in thoracic pattern (Fig. 4f) and in male whip-like genital ligula (Fig. 12i) to *T. isthmica* (Fig. 14b; allopatric) but the ventro-apical tooth on cercus is bidentate (Fig. 16i), not unidentate as in *T. isthmica* (Fig. 18a). Prothorax of female is similar for both species but a vestigial pair of horns may be present in *T. brevis* (Fig. 5j); these horns are always absent in *T. isthmica* (Fig. 7b). They may be further differentiated by condition of the lateral erect lobe of posterior prothoracic lobe, which is semicircular in *T. brevis* (Fig. 5j) and broadly oval in *T. isthmica* (Fig. 7b).

### Remarks

Bick & Bick (1995) examined over 450 specimens and noted variation in venational and body coloration. Three males had a dark mid-dorsal thoracic carina (as in Fig. 4g) one of them with interrupted black) but in the majority of specimens I examined the middle portion of mesepisternum is orange brown bordered laterally by a narrow black stripe (Fig. 4f). A few specimens have this area, except for the mid-dorsal carina, black (Fig. 4g, and see cover picture). These same individuals have a darkened poorly-defined stripe occupying mesepimeron, which is normally light brown (Fig. 4g). Bick & Bick (1995, 1996) described the female prothorax as lacking horns; the one female illustrated here (Fig. 5j) has a pair of vestigial horns. Recognizing possible variation as to this condition, I have treated females as with and without vestigial prothoracic horns in keys.

### Distribution

Ecuador west of the Andes (Fig. 31).

### Biology

Bick & Bick (1995) recorded this species from ponds with water lilies; J. Daigle (pers. comm.) found it in fens with *Equisetum* sp. seepages around Tinalandia, the type locality.

### *Telebasis byersi* Westfall, 1957

Figs 5k (♀ pthx); 12j (lig); 16j; 20k; 23a (app); 29 (map)

*Telebasis byersi* Westfall, 1957: 20 (holotype ♂, allotype ♀, USA, Florida, Alachua County, Bivin's Arm near Gainesville, 22 viii 1950, M. Westfall, in FSCA).

### Specimens examined

USA, Florida, Alachua County: 2 ♂, Hatchet Creek at S-225, 14 iv 1974, leg. K.W. Knopf; 1 ♂, 1 ♀, same but 09 v 1974, leg. KJT; 1 ♀, same but 11 v 1974, leg. KJT; 4 ♂, Prairie Creek, 25 iv 1986, leg. SWD (all RWG).



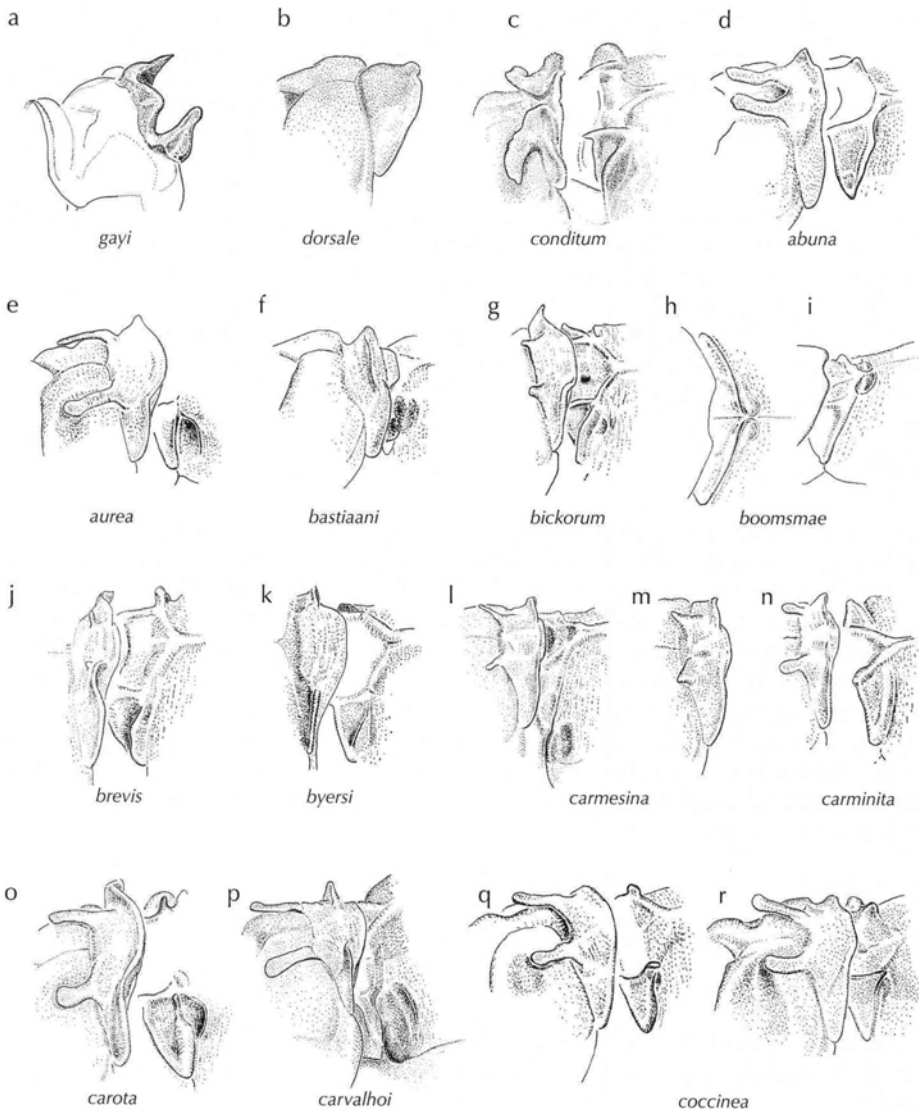


Figure 5: Female pronotum, dorso-medial view (a, b, m), female pronotum and mesostigmal plates, dorso-medial view (c-g, i-l, n-r), female pronotum and mesostigmal plates, dorsal view (h) — (a) *Antiagrion gayi*, Chile, La Jaula (RWG); (b) *Aeolagrion dorsale*, Trinidad, St. Andrew (RWG); (c) *Chromagrion conditum*, USA, NY, Michigan Hollow (RWG); (d) *Telebasis abuna*, allotype, Brazil, Abuna; (e) *T. aurea*, Costa Rica, S of San Vito; (f) *T. bastiaani*, paratype, Venezuela, Corozo Pando; (g) *T. bickorum*, paratype, Bolivia, S of Buena Vista; (h, i) *T. boomsmae*, Belize, Gallon Jug; (j) *T. brevis*, Ecuador, Cojimíes; (k) *T. byersi*, USA, FL, Alachua; (l, m) *T. carmesina*, Brazil, Nova Teutonia; (n) *T. carminita*, Bolivia, Reyes; (o) *T. carota*, Ecuador, Río Jatun Yacu; (p) *T. carvalhoi*, paratype, Brazil, Paraupébas; (q) *T. coccinea*, Paraguay, Cerro Cora; (r) *T. coccinea*, paralectotype, Brazil, Minas Gerais (IRSN).

## Diagnosis

This species is similar to *T. incolumis* and *T. salva* in having a distinct lateral projection at dorsal 0.25 of the posterior portion of mesepisternal black stripe (as in Fig. 4l). The three can be differentiated only by morphology of male caudal appendages (Figs 16j; 18k; 21o; 22e) and by condition of female prothorax (Figs 5k; 7a, l). Adults are diagnosed by Westfall (1957), Bick & Bick (1995, 1996), and Westfall & May (2006) and are further separated in keys to males and females above.

## Distribution

A widespread species in SE USA (Fig. 29). Distribution records from Abbott (2008) show *T. byersi* to approach distribution of *T. salva* in E Texas.

## Biology

Dunkle (1990) records this species as inhabiting ponds with mats of floating aquatic plants.

### *Telebasis carmesina* Calvert, 1909

Figs 1d (head); 5l, m (♀ pthx); 12k (lig); 16k; 20l; 23c (app); 26c (♀ S8-10); 41 (map)

*Erythrargrion corallinum* Selys (1876: 964, in part; 3 ♂, 3 ♀ from São João del-Rei = *T. carmesina*).

*Telebasis carmesina* Calvert, 1909: 191 (syntype ♂, Brazil, Minas Gerais, Sete Lagoas, 04 v 1908, leg. J.D. Haseman; syntype ♂, Chapada, leg. H.H. Smith, both in CM).

## Specimens examined

Brazil, Minas Gerais State: 1 ♂, 1 ♀, Serra do Caraça, Santa Barbara, i 1970, leg. F.M. Oliveira; São Paulo State: 3 ♂, Jacarei, Fazenda Santana do Poço, 16 x 1998, leg. FAL; 1 ♂, Jacarei, Fazenda Santana do Rio Abaixo, 18 i 1996, leg. FAL; 1 ♂, same but 23 x 1996; Santa Catarina State: 3 ♂, Nova Teutonia, v 1972, leg. F. Plauermann; 1 ♂, same but ii 1973; 1 ♀, same but iii 1973; 4 ♂, 1 ♀, same but iii 1975; 4 ♂, same but iv 1975; 2 ♂, 1 ♀, same but v 1975. Bolivia, Santa Cruz Department: 1 ♂, Velasco, pond 15 km NW of San Ignacio, 11 xi 1999, leg. KJT. Argentina, Misiones Province: 2 ♂, San Pedro, Ruta 14, pond, 12 iv 1991, leg. J. Muzón (all RWG).

## Diagnosis

This species is similar to *T. carvalhoi*, *T. corallina*, *T. paraensei*, *T. sanguinalis*, and *T. simulata* by morphology of genital ligula, cerci, and female thorax. In all these species except *T. paraensei*, the cercus has an elongate ventral seam when viewed laterally (Figs 20l, o, s; 22f, j). This seam is the medial inner concave margin, and it often houses the ventral portion of the tooth, which varies specifically. In *T. carmesina* the tooth is elongate and bidentate, and is more easily seen when the cercus is rotated medio-ventrally (Fig. 23c). The ventral margin of the cercus in the other three species is roughly linear (Figs 22f, j), convex (Fig. 20s), or consists of one large tooth (Fig. 20o). In *T. paraensei* the ventral margin of the cercus in lateral view is concave as in *T. carmesina* but only a small portion of the ventral tooth is visible at the tip (Fig. 22b). The female, described and diagnosed in Bick & Bick (1995,

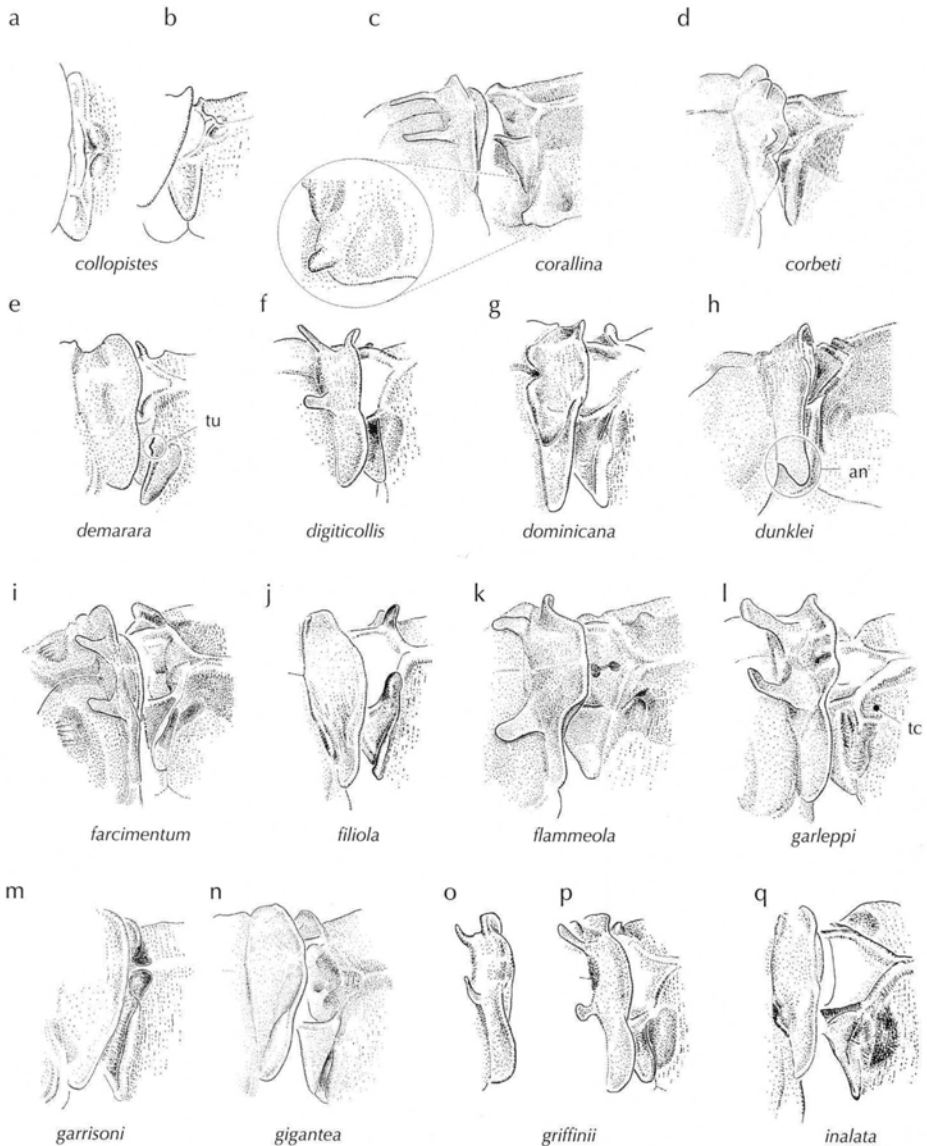


Figure 6: Female pronotum and mesostigmal plates, dorsal view (a), dorso-medial view (b-q) — (a, b) *Telebasis collopistes*, Mexico, Tabasco; (c) *T. corallina*, Brazil, Minas Gerais; insert: Venezuela, Bejuma; (d) *T. corbeti*, paratype, Bolivia, Cobija; (e) *T. demarara*, French Guiana, N of Matoury; (f) *T. digiticollis*, Guatemala, Los Amates; (g) *T. dominicana*, Puerto Rico, Tortuguero; (h) *T. dunklei*, Peru, Explorama; (i) *T. farcimentum*, Colombia, Marvez; (j) *T. filiola*, Venezuela, Tucacas; (k) *T. flammeola*, Ecuador, Río Sinde; (l) *T. garleppi*, Costa Rica, Tapanti; (m) *T. garrisoni*, Colombia, El Banco; (n) *T. gigantea*, Bolivia, Trinidad; (o, p) *Telebasis griffinii*, (o) Ecuador, E of Coca, (p) Brazil, Sitio Primavera; (q) *T. inalata*, Peru, Explorama Lodge. an: angulate; tu: tubercle; tc: triangular concavity.

1996), has a vestigial, arcuate rim (sometimes absent) followed by an elongate black depression on the antero-distal margin of mesepisternum (Fig. 5l). The elongate glabrous tubercle in *T. carvalhoi* (Fig. 5p) and thumb-like tubercle in *T. corallina* (Fig. 6c) separate these two species from *T. carmesina*. The long (extending to  $\geq 0.50$  length of middle lobe), flattened prothoracic horns in *T. paraensei* (Fig. 7i) and *T. sanguinalis* (Fig. 7m) separate them from *T. carmesina* (Fig. 5l). Female of *T. carmesina* differs from *T. simulata* by rear of head and mid-dorsal carina pale (Fig. 1d), at least dorsal part of rear of head dark (Fig. 1f) and mid-dorsal carina black in *T. simulata*, and by morphology of prothoracic posterior lobe; in *T. simulata*, the decumbent medial portion is separated from the erect lateral portions (Fig. 7r) while in *T. carmesina*, the three portions are less pronounced and the lateral portions are smaller and not as erect (Figs 5l, m).

### Remarks

Female prothoracic horns are normally present, small, and extend ca 0.25 the distance of medial lobe (Fig. 5l), but in one specimen (Fig. 5m) the horns are vestigial. Although Bick & Bick (1995: 22) state that the male of *T. carmesina* "... differs from the other two [*T. corallina* and *T. sanguinalis*] in that its head is dorsally nearly all black without striking orange pattern," all males I examined have orange in front of median ocellus, latero-distal to lateral ocellus, and along occipital ridge.

### Distribution

Bolivia, SW Brazil, and NW Argentina (Fig. 41). It is sympatric with *T. corallina* along SE Brazil, and with *T. sanguinalis* in Bolivia.

### *Telebasis carminita* Calvert, 1909

Figs 5n (♀ pthx); 12l (lig); 16l; 20m; 25e (app); 40 (map)

*Telebasis carminita* Calvert, 1909: 194 (syntype ♂, Brazil, Mato Grosso, Cachoeiro Cuyabá, 26 i, leg. H.H. Smith; syntype ♂, no. 9, leg. H.H. Smith, in CM).

### Specimens examined

Venezuela, Bolivar State: 1 ♂, El Pauji, marsh at village, 04 viii 1990, leg. TWD (RWG). French Guiana: 1 ♂, marsh by Piste de Kaw, just E of N2, 17 ii 1988, leg. RWG (RWG); 1 ♂, 2 ♀, Matoury, Paramana, 18 xii 2003, leg. L. Juillerat (MHNN). Bolivia, Beni Department: 1 ♂, 1 ♀, Reyes, 27-30 xi 1956, leg. L. Peña (RWG).

### Diagnosis

This species is easily distinguished from any other by its small size and unique cercal morphology (Figs 16l; 20m; 25e vs 17j, p; 19h; 21h, n; 22r; 25l, x). Both sexes were described and diagnosed by Geijskes (1971), and the female again briefly by Bick & Bick (1995, 1996). By its small size, female approaches only those of *T. fili-ola*, *T. inalata*, and *T. willinki*, but the ovipositor in these species surpasses the tip of the cerci (e.g. Fig. 26d), not so in *T. carminita* (as in Fig. 26c).

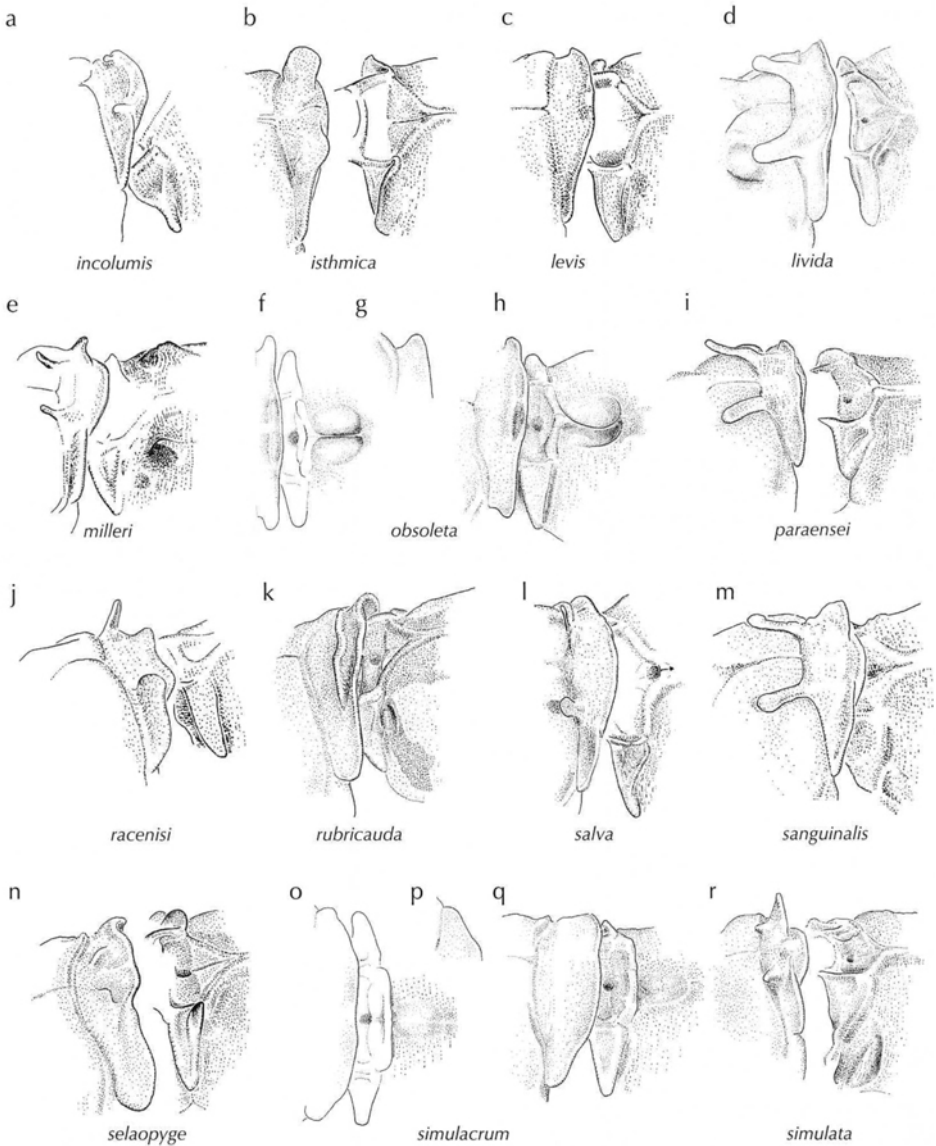


Figure 7: Female pronotum and mesostigmal plates, dorso-medial view (a-e, h-n, q, r); female pronotum and mesostigmal plates, dorsal view (f, o); detail of right corner of female pronotum, dorso-medial view (g, p) — (a) *Telebasis incolumis*, Mexico, Baja California; (b) *T. isthmica*, Venezuela, Tucacas; (c) *T. levis*, paratype, Belize, Gallon Jug; (d) *T. livida*, Peru, Atalaya; (e) *T. milleri*, Peru, Pakitz; (f-h) *T. obsoleta*, Peru, Loreto; (i) *T. paraensei*, Brazil, Coronel Fabriciano; (j) *T. racenisi*, paratype, Venezuela, Puerto Ayacucho; (k) *T. rubricauda*, Ecuador, Río Payamino; (l) *T. salva*, USA, AR, Scotia Canyon; (m) *T. sanguinalis*, Bolivia, Santa Cruz; (n) *T. selaopyge*, Venezuela, San Carlos; (o-q) *T. simulacrum*, Argentina, Corrientes; (r) *T. simulata*, Brazil, Manaus.

## Remarks

Bick & Bick (1995) disagreed with Kennedy's (1919) assignment of this species with *T. carmesina*, *T. corallina*, and *T. sanguinalis* by reason of its different cercal morphology. They stated that *T. carminita* lacked a longitudinal seam; however, as explained under *T. carmesina* above, the seam is the medial inner concave margin and this is present but it follows the transverse axis of the cercus and is not visible in lateral view. Morphology of genital ligula (Fig. 12l) is essentially the same as in *T. paraensei* (Fig. 14h) and *T. sanguinalis* (Fig. 14l), which may indicate a relationship with this cluster of species. Geijskes (1971) assigned his specimens to this species with some doubts due to their larger size and more northerly distribution. My examination of specimens from northern and southern localities convinces me that all represent the same species. The illustration of the male by Geijskes (1971: fig. 1B) shows the left cercus abnormally rotated ventro-medially.

## Distribution

Widespread in South America with records from Venezuela, French Guiana, and curiously disjunct populations over 2000 km south in Bolivia and Mato Grosso State, Brazil (Fig. 40).

## Biology

The males from Venezuela and French Guiana (Piste de Kaw) were collected in a marsh. De Marmels (1983) records this species as common along lake borders with floating masses of *Scirpus cubensis* in Venezuela.

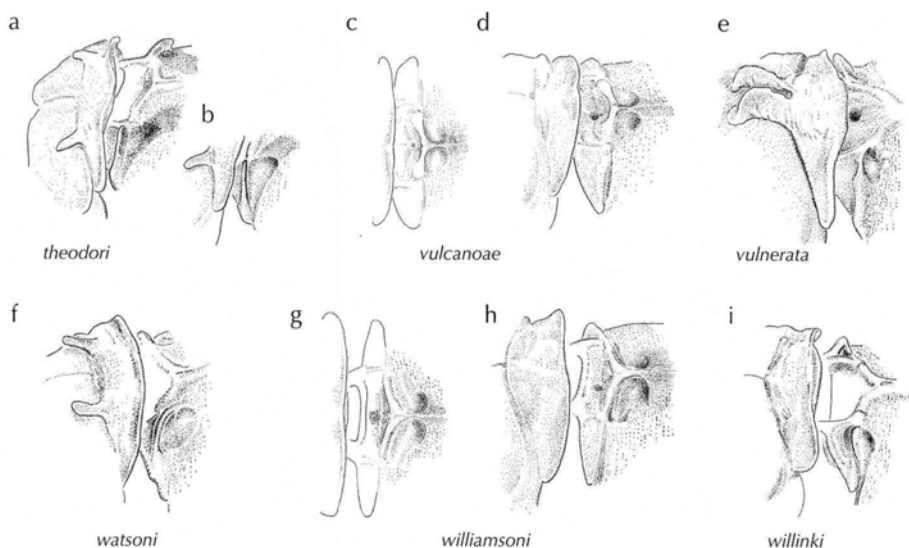


Figure 8: Female pronotum and mesostigmal plates, dorsal view (c, g), female pronotum and mesostigmal plates, dorso-medial view (a, b, d-f, h, i) — (a, b) *Telebasis theodori*, (a) Brazil, Santa Catarina, (b) holotype; (c, d) *T. vulcanoae*, Brazil, Bahia; (e) *T. vulnerata*, Puerto Rico, Camp El Colberg; (f) *T. watsoni*, Peru, Chapajilla; (g, h) *T. williamsoni*, Colombia, El Banco; (i) *T. willinki*, Argentina, Punta Lara.

*Telebasis carota* Kennedy, 1936

Figs 5o (♀ pthx); 12m (lig); 16m; 20n (app); 42 (map)

*Telebasis carota* Kennedy, 1936: 807 (holotype ♂, Ecuador, Napo-Pastaza (Oriente in original description) Province, El Partidero, a village on the Río Anzu, two and one-half days' travel up from the town of Napo, 800 m, 11 xi 1935, leg. W. Clarke-McIntyre, in UMMZ); — Garrison et al. (2003: 28; type catalog UMMZ).

## Specimens examined

Holotype ♂ (UMMZ). Other specimens: Ecuador, Napo Province: 1 ♂, Tena, 598 m., 01 vi 1977, leg. D.L. Vincent (USNM); 1 ♂, 2 ♀, Río Jatun Yacu (700 m), 12 ii 1937, leg. W. Clarke-MacIntyre; 2 ♀, same data 17 ii 1937 (RWG); 3 ♂, 1 ♀, Hollín-Napo (758 m), v 1978 (RWG); Morona Santiago Province: 1 ♂, pond, 7 km S Comunidad Chuwitayo (700 m), 09 xi 1997, leg. KJT (RWG); Pastaza Province: 1 ♂, 1 ♀, Puyo, Río Pastaza watershed (980 m), x 1977, leg. R. de L. (RWG); Tungurahua Province: 3 ♂, 3 ♀, Tungurahua, Río Negro (1,200 m), vi 1977 (RWG).

## Diagnosis

Male appendages (Figs 16m; 20n) are unique. The large internal fold and large well-developed chitinized round tubercle at latero-basal angle of genital ligula flexure (Fig. 12m) group this species with *T. corbeti* (Fig. 13c) and *T. milleri* (Fig. 14f), and

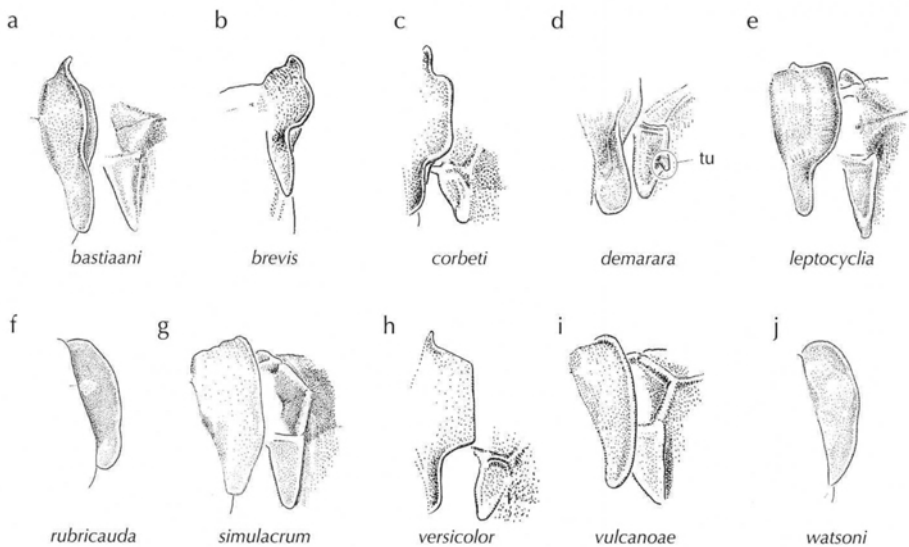


Figure 9: Male pronotum and mesostigmal plates, medio-dorsal view (a, c-e), male pronotum, dorso-medial view (b, f, j) — (a) *Telebasis bastiaani*, paratype, Venezuela, W of Montecal; (b) *T. brevis*, Ecuador, Cojimies; (c) *T. corbeti*, Peru, Madre de Dios; (d) *T. demarara*, Guyana, Georgetown; (e) *T. leptocyclus*, Argentina, Punta Lara, (f) *T. rubricauda*, Ecuador, Napo; (g) *T. simulacrum*, Argentina, Poriahu; (h) *T. versicolor*, Ecuador, Waorani; (i) *T. vulcanoae*, paratype, Brazil, Lago do Bispo; (j) *T. watsoni*, Peru, Chapajilla. tu: tubercle.

it is differentiated from them in Key Ma-2. Further diagnosis from *T. theodori* was given by Garrison (1991). Female has well-developed prothoracic horns (Fig. 5o) and a black mid-dorsal thoracic carina and is diagnosed in Key F-7.

#### Distribution

Ecuador and Junín Department in Peru (Fig 42).

#### Biology

J. Daigle (pers. comm.) found this wary montane species perching high in streamside shrubs and trees.

### *Telebasis carvalhoi* sp. nov.

Figs 5p (♀ pthx); 12n (lig); 16n; 20o (app); 41 (map)

#### Etymology

I name this species *carvalhoi* (noun in the genitive case) in honor of my friend and fellow Odonatologist Alcimar Carvalho, who recognized the species as new and kindly provided me the opportunity to describe it.

#### Specimens examined

Brazil, Pará State: ♂ holotype, Floresta Nacional de Carajás, Parauapebas, S11D-C (6°02'59"S, 49°53'24"W), ix 2005, leg. N. Ferreira Jr. (UFRJ); 28 ♂, 5 ♀, paratypes (all UFRJ; RWG): 5 ♂, same data as holotype but M5S, iii 2005; 5 ♂, 1 ♀, same but N5 Sul, ix 2005; 2 ♂, same data as holotype; 5 ♂, same but 15 iii 2006; 2 ♂, same but N5 Sul, 22 iii 2006; 2 ♂, 2 ♀, same but N4A, 09 ix 2006, leg. N. Ferreira Jr., L.L. Dumas; 3 ♂, 1 ♀, same but Canaã dos Carajás, S11 BA, 27 ix 2007, leg. N. Ferreira Jr., V. Alecrim; 3 ♂, same but 15 ix 2006; 1 ♂, 1 ♀ (both teneral), same but ETA II, 26 ii 2008, leg. N. Ferreira Jr., A. Santos.

#### Male holotype

**Head:** Labium pale ochre, labrum blue gray; clypeus, frons and occiput dull blue gray, paler along genae; epicranium metallic black with following dull orange: medial longitudinal spot on postfrons, ocellar triangle with diagonal arm extending to base of antenna, diagonal arm extending to angulate area of postfrons from base of median ocellus, occipital bar, antennifer, scape, and pedicel; flagellum black; dorsal 0.50 of rear of head black, ventral 0.50 pale ochre.

**Thorax:** Prothorax dull orange, darkened with brown medially at base of frontal lobe and medial portion of prothoracic posterior lobe; thoracic carina dull orange, medial 0.50 of mesepisternum metallic black, remainder of mesepisternum and anterior 0.50 of mesepimeron orange with slight metallic luster, meso- and metapleural fossa, and interpleural suture dark brown; remainder of synthorax including venter of thorax and base of coxae pale ochre. Legs ocher with brown on posterior margins of femora, tarsi pale, dark at extremities, armature black. Wings hyaline, Px: Fw 10; Hw 10 (left) / 9 (right); RP<sub>2</sub> originating at Px 5 in Fw, at Px 4 in Hw; pterostigma orange brown, rhomboidal, surmounting just over one cell.



**Abdomen:** S1-10 red dorsally, paler ventrally. Cerci red becoming black along distal 0.33, paraprocts dull orange, paler ventrally. Genital ligula (as in Fig. 12n) long, with apical 0.50 broadened laterally to form quadrate semihyaline lobe; internal fold present but small; chitinized tubercle at genital ligula flexure absent. Cercus (Fig. 16n; 20o) 0.33 longer than paraproct, ca as high as long at mid-length, bluntly triangular in lateral view (Fig. 20o) with lighter ventral 0.50 recessed medially so that an incomplete longitudinal seam occupies distal 0.80 of cercus, a dark broadly based ventral tooth at medial 0.50; cercus in medio-dorsal view with long longitudinal black tooth in form of ridge, its medial margin concave and with anterior and posterior ends swollen and forming a slightly decumbent tooth; remainder of medial surface slightly concave and with a series of closely appressed cephalically directed golden hairs (Fig. 16n). Paraproct blunt with dorsal surface concave typical of genus. **Dimensions:** Hw 15, abd 23.

#### Female paratypes

Head and thorax similar to male but pale color entirely ochraceous brown, metallic markings on epicranium less extensive than in holotype; middle lobe of prothorax with a pair of flattened slightly diverging anteriorly directed horns (Fig. 5p); posterior lobe with middle part semicircular, decumbent posteriorly, lateral margin separate from middle lobe, strongly erect; mesostigmal plate recessed, small, triangular, bordered posteriorly by an incomplete costate rim; antero-lateral margin of mesepisternum with a prominently raised transversely shaped black tubercle and with a smaller depression posterobasal to tubercle (Fig. 5p). Remainder of synthorax as in male, but with yellow ochre replacing orange. Wings as in male, Px: Fw 10-11, Hw 9-10; RP<sub>2</sub> originating at Px 5-6 in Fw, at Px 4 in Hw. Abdomen entirely ochre, paler below; with dorsal triangular dark brown spot tapering posteriorly at basal 0.50 of S2; cerci dull orange. Dimensions: Hw 16-17, abd 23-25.

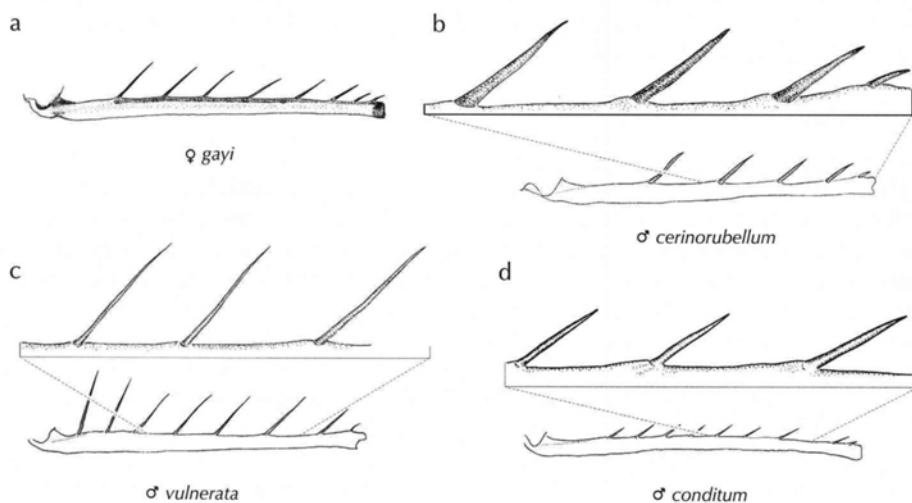


Figure 10: Metatibia, lateral view; inserts, detail of spurs — (a) *Antiagrion gayi*, Chile, La Jaula (RWG); (b) *Ceriagrion cerinorubellum*, Thailand, Chayaphum (RWG); (c) *Telebasis vulnerata*, Dominican Republic, La Vega; (d) *Chromagrion conditum*, USA, NY, Michigan Hollow (RWG).

## Variation in male paratypes

Little variation from holotype is observed ( $n = 10$ ): Some males have more extensive dark markings: epicranium all black except for abbreviated orange line ocellar triangle but not reaching base of antenna and occipital bar; black on rear of head more extensive ventrally; more extensive washes of brown along sutures and sulci of prothorax; and obscure brown spot at anteroventral portion of mesepimeron. Px: Fw 10-11, Hw 8-10; origin of  $RP_2$  at Px 5-6 in Fw, at Px 4-5 in Hw; Hw 15-16; abd 23-24.

## Diagnosis

The large, broadly based ventral tooth at mid-length of cercus in lateral view (Fig. 20o) distinguishes the male from all other species. By coloration and genital ligula morphology this species is most similar to *T. simulata*, but cercus in *T. simulata* (Fig. 22j) is more linear, and the ventral tooth more basal compared to *T. carvalhoi*. The well-developed prothoracic horns coupled with the large transversely oval swelling along the antero-lateral margin of the metepisternum (Fig. 5p) uniquely separate the female of this species from all others. Males and females are further diagnosed in keys M-3, Ma-3 (males), and Key F-6 (females).

## Distribution

Known only from the type locality (Fig. 41).

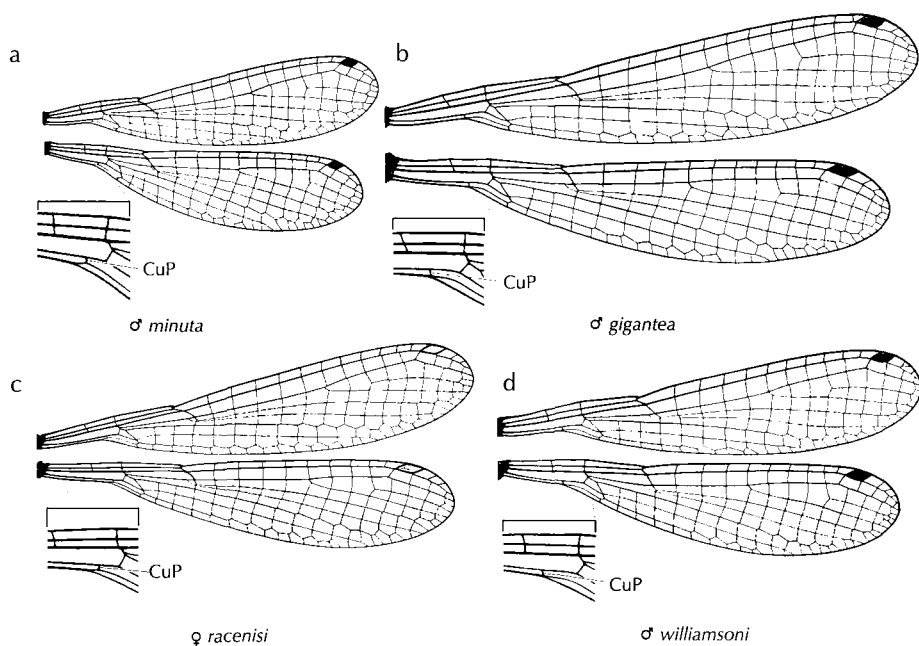


Figure 11: Wings; inserts, detail of Hw base showing CuP — (a) *Nehalennia minuta*, Trinidad, St. Andrew (RWG); (b) *Telebasis gigantea*, Bolivia, Trinidad; (c) *T. racenisi*, Peru, Explorer's Inn; (d) *T. williamsoni*, Colombia, Fundación.

*Telebasis coccinea* (Selys, 1876)

Figs 5q, r (♀ pthx); 12o, p (lig); 16o, p; 20p, q; 25f, g (app); 38 (map)

*Agrion* (*Pyrrhosoma*) *coccineum* Selys in Hagen, 1861: 311 (nomen nudum).

*Agrion* (*Pyrrhosoma*) *dispar* Hagen, 1861: 311 (nomen nudum).

*Erythragrion coccineum* Selys, 1876: 965 (255 reprint; 2 ♂, 1 ♀ syntypes, Minas Gerais, leg. Dr P. Claussen, in IRSN).

*Telebasis coccinea* (Selys). — Kirby (1890: 155; catalog).

*Telebasis coccinata* Calvert, 1909: 193 (2 ♂ Brazil, Chapada, May, leg. H.H. Smith, in CM; 1 ♂ Minas Gerais, in MCZ); **syn. nov.**

## Lectotype designations

I designate as lectotype of *E. coccineum* a male labeled “Mg [written by Selys],” “*Telebasis coccinea* [written],” Desseine par/Santos 6.x.61 [written].” and present illustrations of appendages of the lectotype (Figs 16o; 20p; 25g) and prothorax of the paralectotype female (Fig. 5r).

Calvert (1909) described *T. coccinata* from a mixed series: 2 ♂ and parts of 2 other ♂ from Chapada in CM and 1 ♂ from Minas Gerais in MCZ with no type designation. The ♂ in CM labeled by Calvert “TYPE/Orig. pl. V ff. 103 103s” is hereby designated as lectotype of *T. coccinata* and its appendages are illustrated (Figs 16p; 20q; 25f).

## Specimens examined

Lectotype and paralectotypes of *E. coccineum* (2 ♂, 1 ♀ in IRSN) and *T. coccinata* (2 complete ♂, 2 incomplete ♂ in CM; 1 ♂ in MCZ). Other specimens: Brazil, Bahia State: 1 ♂, São Desidério, Rio Galheiro (804 m), 17 i 2004, leg. P.S., R.C. Ferreira Peruquetti; Mato Grosso State: 1 ♂, Brasília, palm swamp, Reserva Ecologia (1079 m), 25 x 1980, leg. N. Dos Santos, H. Mesquita. Paraguay, Amambay Province: 1 ♂, Cerro Cora (253 m), 30 xi 1973, leg. O.S. Flint Jr.; 1 ♂, 1 ♀, same data but leg. L.A. Bulla (all RWG).

## Diagnosis

Male appendages (Figs 16o, p; 20p, q; 25f, g) are similar to those of *T. abuna* (Figs 16d; 20e; 25a), and male is diagnosed under that species. The elongate, trowel-like tip of genital ligula with small posteriorly pointed lateral lobe (Figs 12o, p) is similar to that of *T. livida* (Fig. 14e), and is diagnosed from that species in Key Ma-4. Female has well-developed prothoracic horns, deep and transversely oval depressions on prothoracic middle lobe (Figs 5q, r), and a black mid-dorsal thoracic carina, and is diagnosed in Key F-7.

## Remarks

Selys’ types had not been examined since the original description; Calvert (1909) only gave an English translation of the original description, and Bick & Bick (1995) did not treat this species. Examination of the type series of *T. coccinea* and *T. coccinata* convince me that both represent the same species.

The paralectotype male of *T. coccinata* from Minas Gerais in MCZ carries a holograph label in Hagen’s hand “*Agrion/dispar* [nomen nudum].”

Heckman (2008: 453) includes *Agrion rubens* Hagen 1861 (a nomen nudum) as a synonym of *T. coccinea* but that ms label had been applied to one of the syntypes of *Agrion vulneratum* Hagen from Essequibo and is discussed under that species (see under *T. vulnerata*, p. 103).

The slight concavity between the subapical tooth and distal margin of the cercus may be obscured by a small thick set of pale curled hairs (Fig. 16o) making the tooth appear continuous with the cercus.

#### Distribution

Widely distributed from Bahia State, Brazil through south central Paraguay (Fig. 38) but specimens appear to be scarce in collections.

### *Telebasis collopistes* Calvert, 1902

Figs 6a, b (♀ pthx); 13a (lig); 17a; 20r; 24b; 25h (app); 33 (map)

*Telebasis collopistes* Calvert, 1902: 116 (holotype ♂, Mexico, Tabasco State, Teapot, i, leg. H.H. Smith, in BNHM); — Kimmins (1970: 184; catalog BNHM).

#### Specimens examined

Mexico, Tabasco State: 1 ♂, 1 ♀, ponds 56 km W Cardenas, 02 vii 1965, DRP, M.L. Paulson. Belize, Orange Walk District: 1 ♂, Gallon Jug (120 m), 05 v 1993, leg. T. Boomsma; same but 06 v 1993; 3 ♂, 2 ♀, same but 08 v 1993 (all RWG).

#### Diagnosis

Male appendages (Figs 17a; 20r; 24b; 25h) and structural details of the female prothorax and thorax (Figs 6a, b) are similar to those of *T. boomsmae* (Figs 5h, i; 16h; 20i; 24a; 25c), and *T. collopistes* is diagnosed under that species.

#### Remarks

Although I did not examine the holotype, S. Brooks of the BNHM confirmed my identification by comparing my illustrations with the holotype (Garrison 1994).

#### Distribution

SE Mexico and Belize (Fig. 33).

#### Biology

Found in both wooded swamps and open marshes in Tabasco (DRP pers. comm.).

### *Telebasis corallina* (Selys, 1876)

Figs 6c (♀ pthx); 13b (lig); 17b; 20s (app); 40 (map); Plate 1a (♂)

*Agrion* (new Sub-genus) *bitaeniatum* Selys in Hagen, 1861: 310 (nomen nudum).

*Agrion* (*Pyrrhosoma*) *corallinum* Selys in Hagen, 1861: 311 (nomen nudum).

*Erythrargrion erythrinum* Selys, 1876: 964 (254 reprint; in part, 1 ♀ from “Minas Geraes”). [misidentification]

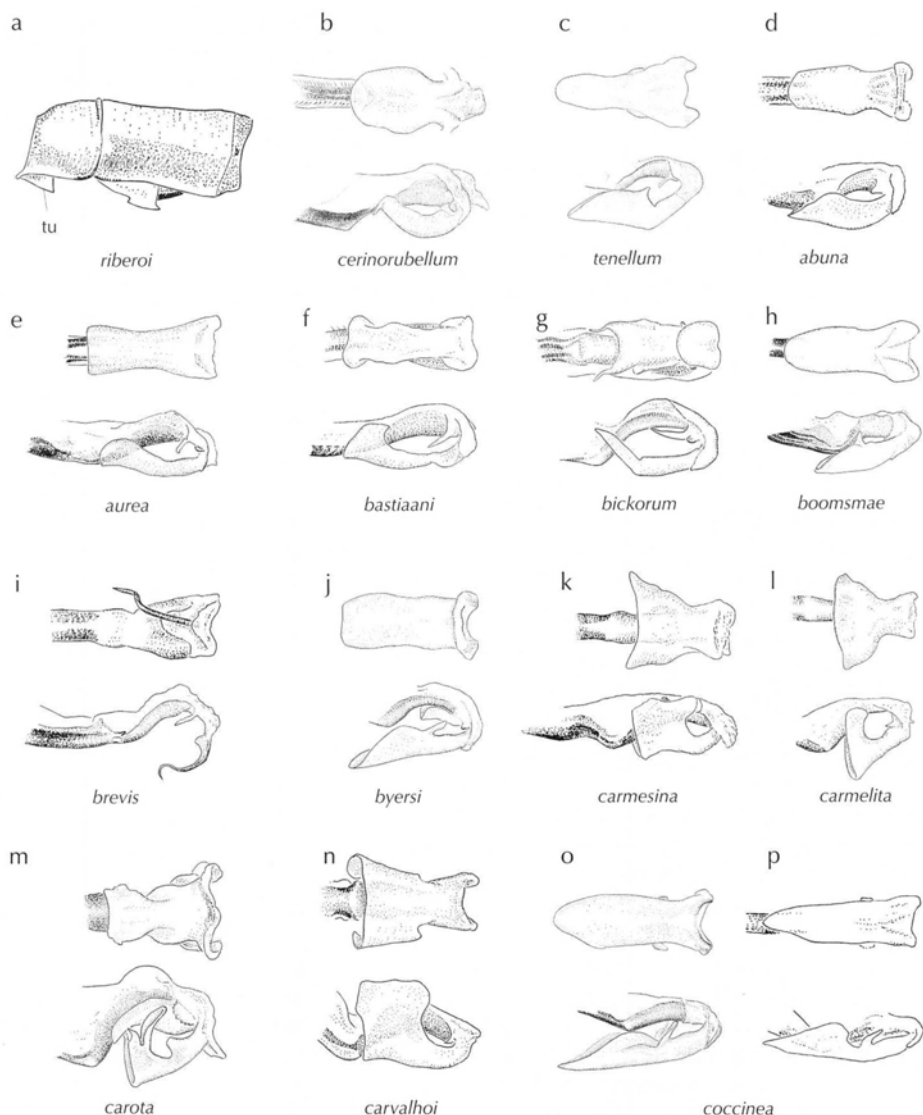


Figure 12: Male S1-2, lateral view (a), and genital ligula (b-m), ectal view (above) and lateral view (below) — (a) *Minagrion riberoi*, Brazil, Guanabara (RWG); (b) *Ceriagrion cerinorubellum*, Thailand, Chayaphum (RWG); (c) *C. tenellum*, UK, Lyndhurst (RWG); (d) *Telebasis abuna*, holotype, Brazil, Abuna; (e) *T. aurea*, Costa Rica, S of San Vito; (f) *T. bastiaani*, paratype, Venezuela, Coroza Pando; (g) *T. bickorum*, paratype, Bolivia, S Buena Vista; (h) *T. boomsmae*, Belize, Gallon Jug; (i) *T. brevis*, Ecuador, Cojimies; (j) *T. byersi*, USA, FL, Hatchet Creek; (k) *T. carmesina*, Brazil, Jacarai; (l) *T. carminita*, Bolivia, Reyes; (m) *T. carota*, Ecuador, Río Jatun Yacu; (n) *T. carvalhoi*, Brazil, Paraupebas; (o) *T. coccinea*, Brazil, São Desideiro; (p) *T. coccinea*, syntype of *T. coccinata*, Brazil, Minas Gerais (MCZ).

*Erythrargrion corallinum* Selys, 1876: 964 (254 reprint; “Brésil: S. João del Rey”, Province de Rio, beginning ix, leg. Dr Claussen, Santa-Cruz, 10 x, leg. W. de Selys, IRSN).

*Telebasis corallina* (Selys). — Kirby (1890: 155; catalog); — von Ellenrieder & Garrison (2007: 28; synonymy of *T. erythrimum*).

### Lectotype designation

The late M.J. Westfall Jr. designated a male in IRSN as lectotype but this was never published; I do so here concurring with Westfall's selection as lectotype.

### Specimens examined

Lectotype ♂ in IRSN. Other specimens: Guadeloupe, Grande-Terre: 1 ♂, Mare Fidelin, Chazeau, D101, 06 ii 2006; 1 ♂, N of Grands Fonds, 24 viii 1989, leg. J. Darlington; 2 ♂, Easse-Terre, St. Claude (544 m), 03 xi 2006, leg. F. Meurgey. Trinidad, St. Patrick County: 2 ♂, Pitch Lake, 09 iii 1912, leg. E.B. Williamson; 6 ♂, same but La Brea, 24 vi 1993, leg. O.S. Flint Jr., N.E. Adams; Victoria County: 1 ♂, Edward Trace, 7 km E Basse Terre, 27 vi 1993, leg. O.S. Flint Jr., N.E. Adams. Venezuela, Bolivar State: 1 ♂, El Paso S of Ciudad Guayana See [Lake?], 06 ix 1974, leg. G. von Rosen; Yaracuy State: 4 ♂, Nirgua (873 m), 28 ii 1920, leg. J.H., E.B. Williamson, W.H. Ditzler; Carabobo State: 3 ♂, 1 ♀, Bejuma, 16 ii 1920, leg. J.H., E.B. Williamson, W.H. Ditzler; 1 ♂, same but 18 ii 1920. Brazil, Roraima State: 1 ♂, 1 ♀, Surumu, NW of Deposito, ix 1966, leg. M. Alvarenga; Minas Gerais State: 2 ♀, Estrada Barbacuda - São João del Rei, km 35 (917 m), 06 xii 1970, leg. F.M. Oliveira; Espírito Santo State: 1 ♂, Conceição da Barra, litoral, 07 viii 1969, leg. P. Elias; Rio de Janeiro State: 1 ♂, Ilha de Marambaia, Praia da Armacao (by boat), 03 xii 2000, leg. RWG; 2 ♂, Marica, Restinga de Marica, leg. Lab. Entomologia, IB, UFRJ; São Paulo State: 1 ♂, Picinguaba, Ubatuba, swamp, 02 vii 1999, leg. P.W. Carvalho (all RWG).

### Diagnosis

Male appendages (Figs 17b; 20s) and structural details of female prothorax and thorax (Fig. 6c) are similar to those of *T. carmesina*, *T. carvalhoi*, *T. corallina*, *T. paraensei*, *T. sanguinalis*, and *T. simulata*. Both sexes are diagnosed from *T. carmesina* and *T. carvalhoi* under those species' accounts. The cercus in male *T. corallina* is widest distally in lateral view, and the ventrally directed medial tooth is at level with curved distal tooth at apical 0.33; in *T. paraensei*, the cercus is widest basally (Fig. 22b) and the ventrally directed medial tooth is well anterior to level of curved distal tooth at basal 0.33 (Fig. 18h). The genital ligula of *T. corallina* has a dorsally-directed lateral lobe (Fig. 13b); the same structure is directed posteriorly in *T. paraensei* (Fig. 14h). Female of *T. corallina* has a unique anteriorly-directed thumb like process at antero-distal corner of mesepisternum (Fig. 6c); a swollen area occupies the same area in *T. paraensei* (Fig. 7i). Male of *T. corallina* differs from *T. sanguinalis* and *T. simulata* in shape of cerci: widened distally in *T. corallina* (Figs 17b; 20s), linear in the latter two species (Figs 18l, p; 22f, j). The anteriorly-directed thumb like process at antero-distal corner of mesepisternum in female of *T. corallina* is lacking in females of the other two species. Both sexes are further separated in the keys.

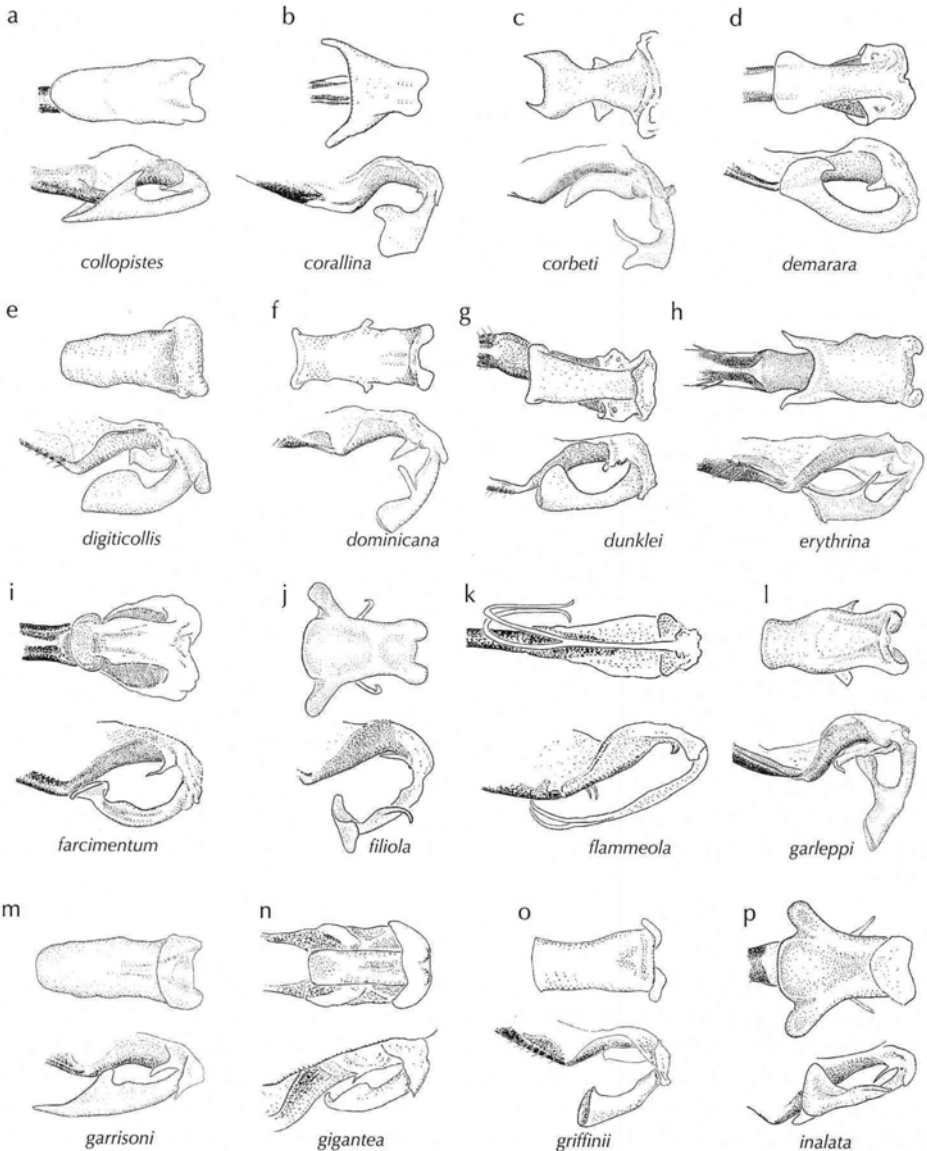


Figure 13: Male genital ligula, ectal view (above) and lateral view (below) — (a) *Telebasis collopistes*, Belize, Gallon Jug; (b) *T. corallina*, Venezuela, Bejuma; (c) *T. corbeti*, holotype, Peru; (d) *T. demarara*, Guyana, Georgetown; (e) *T. digiticollis*, Mexico, Catemaco; (f) *T. dominicana*, Puerto Rico, Tortuguero; (g) *T. dunklei*, Peru, Explorama; (h) *T. erythrina*, Brazil, Peti; (i) *T. farcimentum*, Colombia, Valle de Cali; (j) *T. filiola*, Venezuela, Tucacas; (k) *T. flammeola*, paratype, Ecuador, Río Yanananaca; (l) *T. garleppi*, Costa Rica, Tapanti; (m) *T. garrisoni*, Colombia, El Banco; (n) *T. gigantea*, Bolivia, S of Buena Vista; (o) *T. griffinii*, Ecuador, E of Coca; (p) *T. inalata*, Peru, NE of Iquitos.

## Remarks

The female described as *E. erythrinum* has the following labels: “Cl[ausen]/3 [written on blue paper],” “erythrinum [written on white paper],” “bitaeniatum/De Selys [written, green label] is a female of *T. corallina*“. I have added an identifying label.

## Distribution

This widely ranging species extends from Costa Rica, Cuba (Alayo 1968a, b; misidentified as *T. sanguinalis*), Dominica and Guadeloupe in the Lesser Antilles (Donnelly 1970; misidentified as *T. sanguinalis*), to Venezuela and N Brazil, and south along the Atlantic coast into Rio Grande State, SE Brazil (Fig. 40).

## Biology

A pond species, taken at marshes and roadside pools. RWG collected a male at a shallow exposed rain pond at Ilha de Marambaia, Rio de Janeiro, Brazil.

### *Telebasis corbeti* sp. nov.

Figs 6d (♀ pthx); 9c (♂ pthx); 13c (lig); 17c; 21a; 25i (app); 42 (map)

*Telebasis* sp. nr. *fluviatilis* — Butt (1995: 96; 5 ♂ from Tambopata, Peru).

## Etymology

I name this species *corbeti* (noun in the genitive case) in honor of our late colleague Philip S. Corbet, dean of odonate biology, and who contributed so much to the study of these fascinating insects.

## Specimens examined

Peru, Madre De Dios Department: ♂ holotype, Tambopata-Candamo Reserved Zone, Camp 3, the Collpa, Río Tambopata W bank (13°08'31"S, 69°36'46"W), 17 ix 1992, leg. M. Butt (BNHM); 9 ♂, 1 ♀ paratypes: 1 ♂ paratype, same data as holotype (RWG); 1 ♂ paratype, same but 16 ix 1992 (BNHM); Loreto Department: 1 ♂ paratype, Explornapo Camp, AACER (3°16'33"S, 72°56'18"W), 28 ii 1993, leg. P. Donahue (DRP). Bolivia, Pando Department: 2 ♂, paratypes, Reserva San Sebastián Tahuaman Cobija (11°24'27"S, 69°01'04" W), 21 xii 2003, leg. C. Hamel & D. Mann (CBF); 1 ♂ paratype, same but (OUMNH); 1 ♂ paratype, same but (DP); 1 ♂, 1 ♀, paratypes, same but 19 xii 2003 (CBF).

## Male holotype

**Head:** Labium pale ochre, entire face light blue, labrum and postclypeus blue-brown, antefrons dull orange, epicranium including occipital bar matte black with dull orange diagonal arm extending from ocellar triangle to base of antenna; antennifer, scape, pedicel (flagella missing) dark brown; rear of head black.

**Thorax:** Prothorax orange, becoming pale blue laterally, darkened with brown at central pit; posterior lobe with a well-defined quadrate medial lobe (as in Fig. 9c); thoracic carina black, medial 0.65 of mesepisternum metallic black, humeral fossa black, remainder of mesepisternum pale blue, mesepimeron and mesinfraepisternum



orange, remainder of synthorax including venter of thorax and base of coxae pale blue. Legs ochre with wash of brown on posterior margins and tips of femora, tibial spurs longer than interval between them, tarsi pale, dark at extremities, armature black. Wings hyaline, Px: Fw 12 (left) / 14 (right), Hw 11; RP<sub>2</sub> originating at Px 6, at Px 5 in Hw; pterostigma orange brown, rhomboidal, surmounting one cell.

**Abdomen:** S1 pale blue; S2-3 entirely red dorsally, paler ventrally and brown at annuli; S4 orange with apical 0.70 becoming black dorsally; S5-6 black with narrow orange ring at anterior 0.10; S7 black dorsally at basal 0.70 becoming orange posteriorly and laterally; S8-10 orange. Genital ligula (Fig. 13c) longer than wide, narrow, with inner fold well developed, extending to 0.75 of apical segment and with raised sclerotized semicircular swelling at lateral flexure; apical segment in lateral view with three well-developed lateral lobes; two apical and one basal, the second apical lobe long, narrow, acute, and twice as long as more apical blunt lobe, a smaller broadly triangular third lobe at basal 0.50 of apical segment. Cerci dark brown, paler basally, paraprocts orange. Cercus in lateral view (Fig. 21a) slightly longer than S10, and three times longer than rudimentary paraproct, linear, swollen at base and gradually narrowing and slightly decumbent distally, round tooth visible at ventro-basal margin; cercus in medio-dorsal view (as in Fig. 17c) similar to its lateral view but with medial margin gently concave and with prominent black ventral tooth. Paraproct biramous with postero-dorsally directed dorsal branch longer than smaller postero-ventral branch and in medio-dorsal view with medial surface accommodating ventro-basal tooth of cercus.

**Dimensions:** Hw 15, abd 25.

#### Female paratype

Head and thorax similar to male but metallic markings on epicranium less extensive than in holotype; middle lobe of prothorax bare; posterior lobe complex, with medial portion bilobed meeting lateral portions at an angle, and with a pair of prominent, digit-like tubercles anterior to hind margin, these laminate tubercles well developed and as high as posterior border of prothorax (Fig. 6d); mesostigmal plate triangular, bordered posteriorly by a diagonal costate rim with its distal portion inflated and higher than medial portion; no depression posterior to medial margin of mesostigmal plate. Wings as in male, Px Fw 13(left) [right Fw missing]; Px Hw 11; RP<sub>2</sub> originating at Px 6 in Fw, at 5 Px in Hw. Abdomen black above except for incomplete pale ring at base of each segment, ochre laterally with lateral pale areas of S6-10 becoming orange; cerci brown. Dimensions: Hw 19, abd 29.

#### Variation in male paratypes

Agree with holotype but legs paler; male from Loreto Province with epicranium black with dark metallic green luster and with antefrons blue; two from Bolivia with a narrow black humeral stripe. Px: Fw 11-14, Hw 10-12; origin of RP<sub>2</sub> in Fw 6, Hw 5; Hw 15-17; abd 25-27.

#### Diagnosis

The appendages (Figs 17c; 21a; 25i), pronotal shape (Fig. 9c), and genital ligula (Fig. 13c) ally this species with *T. versicolor* (Figs 9h; 15a; 19c; 22m; 25u), but in the latter the cercus is more robust, the ventro-basal tooth is more distal, and there is a

supplementary medial tooth (lacking in *T. corbeti*). Female pronotum (Fig. 6d) is similar to that for *T. selaopyge* (Fig. 7n) and is differentiated in Key F-5.

#### Remarks

Butt (1995: 96) listed this species as *Telebasis* sp. nr. *fluviatilis* based on my determination of his series of five males in 1993 before I discovered (Garrison 1997) the true identity of *T. fluviatilis* (see under that species). The female I describe here was collected at the same locality as six paratype males but on a different date; similarities in overall coloration suggest that I have correctly associated it with this species.

#### Distribution

Loreto and Madre de Dios Departments in Peru and Pando Department in Bolivia (Fig. 42).

#### Biology

Butt (1995) records his captures within flooded forest on bank of Río Tambopata.

### *Telebasis demarara* (Williamson, 1917)

Figs 6e (♀ pthx); 9d (♂ pthx); 13d (lig); 17d; 21b (app); 36 (map)

*Aeolagrion demararum* Williamson, 1917: 244 (holotype ♂, allotype ♀, British Guiana, Georgetown, 26 i 1912, leg. L.A., E.B. Williamson, B.J. Rainey, in UMMZ).

*Aeolagrion demerarum* Calvert (1948: 59; structural details of mesostigmal plates, misspelling of specific epithet).

*Telebasis fluviatilis* St. Quentin, 1960: 50 (holotype ♂, allotype ♀, “Taperinha bei Santarem”, in NHMW).

*Telebasis demararum* (Williamson). — Dunkle (1991: 241; change of genus); — Garrison (1997: 471; synonymy of *T. fluviatilis*).

#### Specimens examined

Holotype ♂, allotype ♀ of *A. demararum* (UMMZ); holotype ♂, allotype ♀ of *T. fluviatilis* (NHMW). Other specimens: Trinidad, St. Andrew County: 1 ♂, Nariva Swamp, 5 km S Lower Manzanilla, 20 vi 1993, leg. O.S. Flint Jr., N.E. Adams; 6 ♂, same but 16 km S Lower Manzanilla; Victoria County: 1 ♂, roadside pools, Edward Trace, 7 km E Basse Terre, 27 vi 1993, leg. O.S. Flint Jr., N.E. Adams. Guyana, Demerara-Mahaica Region: 2 ♂, Georgetown, 06 vi 1936, leg. N.A. Weber; 1 ♂, Demerara, Dakara Recreational Area at Timerhi Airport, 18 vi 1971, leg. TWD. French Guiana: 1 ♂, 1 ♀, 5 km N of Mature on N2, 14 ii 1988, leg. RWG (all RWG).

#### Diagnosis

The elongate forcipate cerci of male (Figs 17d; 21b) and tubercle on hind margin of mesostigmal plate in both sexes (tu, Figs 6e; 9d) uniquely characterize this blue species.

#### Remarks

In the original description (Williamson 1917), the species is spelled “*demararum*” but the figure of the appendages is labeled “*demerarum*,” and Calvert (1948) repeats

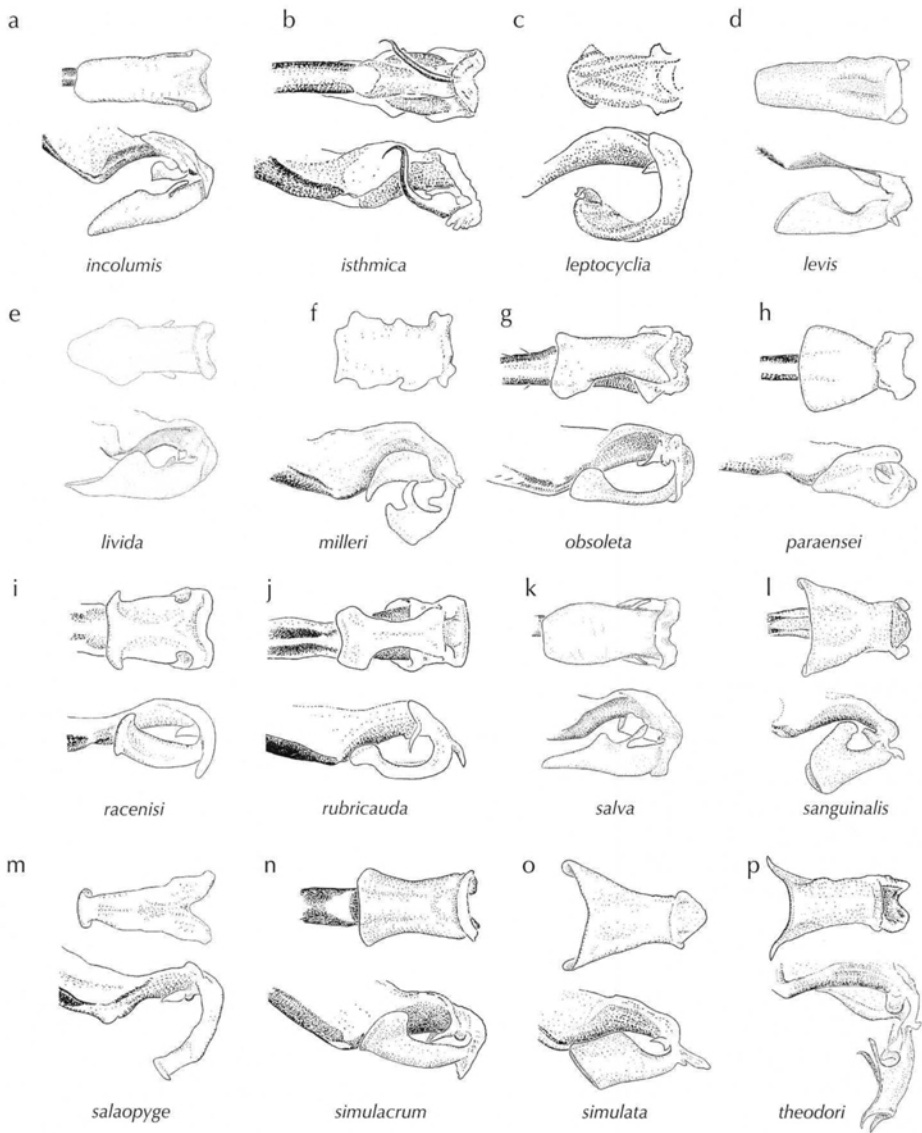


Figure 14: Male genital ligula, ectal view (above) and lateral view (below) — (a) *Telebasis incolumis*, Mexico, Baja California; (b) *T. isthmica*, Venezuela, Tucacas; (c) *T. leptocyclia*, Brazil, Abuna; (d) *T. levis*, paratype, Belize, Gallon Jug; (e) *T. livida*, Peru, Atalaya; (f) *T. milleri*, paratype, Peru, Pakitza; (g) *T. obsoleta*, lectotype, BNHM; (h) *T. paraensei*, Brazil, Coronel Fabriciano; (i) *T. racenisi*, paratype, Venezuela, Puerto Ayacucho; (j) *T. rubricauda*, Peru, Tambopata; (k) *T. salva*, USA, TX, Jeff Davies County; (l) *T. sanguinalis*, Bolivia, Santa Cruz; (m) *T. selaopyge*, Venezuela, Río Negro; (n) *T. simulacrum*, Bolivia, Buena Vista; (o) *T. simulata*, Brazil, Manaus; (p) *T. theodori*, Brazil, Nova Teutonia.

the misspelling. The correct name for the species is *demararum*, and its ending needs to be corrected to the feminine *demarara* to agree in gender with *Telebasis*.

The thumb-like tubercle on the posterior margin of the mesostigmal plate is smaller and more medially placed in female (Fig. 6e) compared to male (Fig. 9d). There is also a large black transversely oval depression immediately behind the mesostigmal lobe which corresponds to the "...minute metallic green spot on to the anterior surface of the mesepisternum..." of Calvert (1948: 60) and the "...adjoining black area" noted by Bick & Bick (1995: 35). This depression is characteristic in varying forms for many female species of *Telebasis*.

The species name *demararum* is here emended to *demarara* in accordance with Art. 34.2 of the Code (ICZN 1999).

## Distribution

This species occurs primarily through Trinidad, Venezuela, and the Guyanas; the most southerly record appears to be Pará State, Brazil (Fig. 36).

## Biology

A species of marshes and ponds. Williamson (1917) describes collecting the type series at a pool with *Nelumbo* sp. into which a small stream of water trickled.

### *Telebasis digiticollis* Calvert, 1902

Figs 4h (♂ thx); 6f (♀ pthx); 13e (lig); 17e; 21c (app); 32 (map)

*Telebasis digiticollis* Calvert, 1902: 118 (holotype ♀, Mexico, Tabasco state, Teapa, i, leg. H.H. Smith, in BNHM); — Calvert (1907: 384; description of male); — Kimmins (1970: 184; catalog BNHM).

## Specimens examined

Mexico, Veracruz State: 3 ♂, 1 ♀, pond 28 km NE of Huatusco, by highway 66, 11 viii 1976, leg. RWG (RWG); 1 ♂, 1 ♀, pond by Río La Palma, 25 km N of Catemaco, 04 viii 1982, leg. RWG (RWG); 1 ♂, same but 05 viii 1982; 4 ♂, Caldera pond at Catemaco, 30 viii 1988, leg. RWG (RWG); 2 ♂, Laguna de Nixamalpa, NNE of Catemaco, 31 viii 1988 (MLM); 5 ♂, Agua Caliente, 1 km SE of Sontecomapan, 30 viii 1988 (RWG); 1 ♂, same but stream and hillside seepages, 30 viii 1988, leg. SWD (SWD); 1 ♂, stream on road to Jicacal Beach and pond near Rancho La Esperanza, 28 viii 1988, leg. SWD (SWD); 2 ♀, Río La Palma & pond near Sontecomapan, near Los Tuxtlas Biological Station, 17 vii 1992, leg. SWD (SWD); 1 ♂, Minatitlan, 26 viii 1961, leg. R., K. Dreisbach (RWG). Belize, Toledo District: 1 ♂, 1 ♀, Punta Ycacos, 30 vi 1993, leg. J.C. Meerman (RWG); 1 ♂, pond and swampy slough 5.5 km S of Swaey River on Southern Highway, near Santa Rosa, 8 vi 1993, leg. SWD (SWD); 2 ♂, Cayo District, small creek 9.5 km W of Belmopan on western highway, 19 iii 1986, leg. SWD (SWD). Guatemala, Zacapa Department: 1 ♂, 2 ♀, Los Amates, 22 vi 1909, E.B. Williamson (RWG). Honduras, Francisco Morazan Department: 2 ♂, Zamorano, Escuela Agrícola Panamericana (EAP), 30 km ESE Tegucigalpa, 09 xii

1987 (RWG); 1 ♂, 1 ♀, same but ponds and Yeguari River with riffles and pools, 9 xii 1987, leg. SWD (SWD); 2 ♂, same but 14 xii 1987 (SWD); 4 ♂, 1 ♀, same but small stream and grassy seeps, 28 ii 1990 (SWD); 2 ♂, same but small stream, 5 iii 1990 (SWD); 2 ♂, same but Quebrada El Gallo, 15 iii 1990 (SWD); Atlántida Department: 1 ♀, river a few km E of Peru, E of La Ceiba, 10 iii 1990 (SWD); 5 ♂, 1 ♀, Lancetilla Botanic Garden, 5 km SE Tela mostly at Lily Pond (Laguna de la Ninfa) and feeder seepages, 11 iii 1990 (SWD). Costa Rica, Limón Province: 1 ♂, 4.8 km SW Limón, marsh, 06 viii 1964, leg. F.G. Thompson (FSCA); 7 ♂, 2 ♀, swampy pond 1.2 km W of Río Parismina on road to Guapiles, 05 iii 1967, leg. SWD (FSCA; RWG; SWD); Alajuela Province: 1 ♂, 1 ♀, Los Chiles, Río Frío, 20 vii 1966, leg. DRP (RWG); 1 ♂, same but 29 viii 1966 (FSCA); 1 ♂, same but 13 x 1966 (FSCA); 1 ♂, same but 14 x 1966 (FSCA).

### Diagnosis

This species is closely related to *T. levis* (= *T. griffinii* sensu Calvert; see under *T. griffinii*) and especially to *T. griffinii* (see under Remarks). Male cercus in medio-dorsal view is narrow and parallel-sided and its tip is bluntly angulate in *T. levis* (at, Figs 18c, d); the same structure is swollen along distal 0.50 (sw, Fig. 17e) and its tip is rounded in *T. digiticollis* (rt, Fig. 17e) and *T. griffinii* (Figs 17o, 27b). Male cercus extends to ca 0.75 of paraproct length in *T. griffinii* (Figs 21m, 27b) and to  $\leq 0.70$  in *T. digiticollis* (Fig. 21c); the difference is difficult to detect except by direct comparison. Female differs by armature of the prothorax; *T. levis* lacks horns (Fig. 7c) while *T. digiticollis* (Fig. 6f) and *T. griffinii* (Figs 6o, p) have them. Lateral portions of prothoracic posterior lobe in female of *T. digiticollis*, though erect, are continuous with rim of medial portion of lobe (Fig. 6f); in *T. griffinii*, the lateral portions are more erect and disjunct from rim of decumbent medial portion (Figs 6o, p).

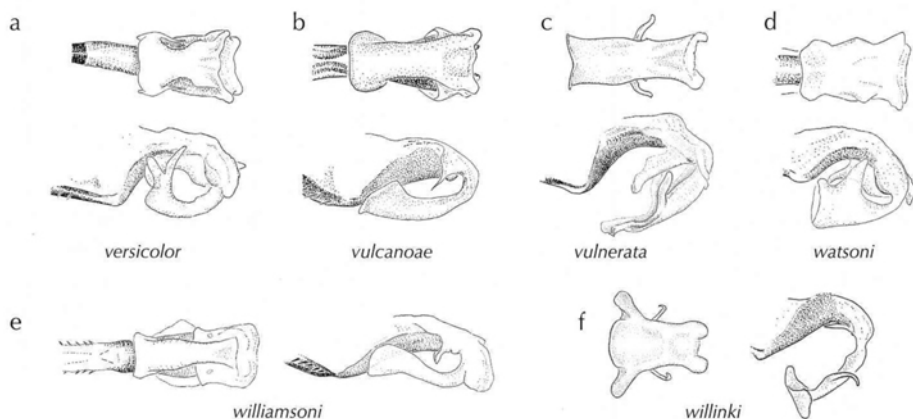


Figure 15: Male genital ligula, (a-d) ectal view (above) and lateral view (below), (e-f) ectal view (right) and lateral view (left) — (a) *Telebasis versicolor*, Ecuador, Reserva Etnica; (b) *T. vulcanoae*, paratype, Brazil, Lago do Bispo; (c) *T. vulnerata*, Puerto Rico, Luquillo; (d) *T. watsoni*, Peru, Chapajilla; (e) *T. williamsoni*, paratype, Venezuela, Encontrados; (f) *T. willinki*, Argentina, Buenos Aires.

## Remarks

I did not examine the holotype ♀ in BNHM, but compared a male with a specimen determined by Calvert as *T. digiticollis*. Bick & Bick (1995) list *T. digiticollis* from Mexico, Belize, Guatemala, Honduras, El Salvador, and Costa Rica but state that they did not verify records for Panama (Donnelly 1992) and Venezuela (De Marmels 1990). My examination of specimens listed previously as *T. digiticollis* from South America and Panama show all to be *T. griffinii*. The southernmost bona fide records of *T. digiticollis* are from N Panama. Thus *T. digiticollis* and *T. griffinii* are apparently parapatric with their ranges contiguous in N Panama (Fig. 32).

I have been unable to find consistent morphological differences in male appendage and female pronotal morphology which will reliably separate between these two taxa beyond those mentioned by Bick & Bick (1995) and in the keys in this paper. The small series from Honduras shows character overlap between this species and *T. griffinii* in diagnostic color characters mentioned by Bick & Bick (1995). Populations of *T. digiticollis* generally have more extensive black coloration on the pronotum and mesothorax (Fig. 4h), but some have reduced black as in *T. griffinii* (Fig. 4k) even within the same series. Hind lobe of the prothorax in *T. griffinii*, though usually discontinuous with middle lobe, can be continuous as in *T. digiticollis*. Pending further study and access to more material, I treat *T. digiticollis* as a valid species but suggest it may represent a more northerly generally darker phenotype of *T. griffinii*.

## Distribution

Occurs from Veracruz State, SE Mexico south through Bocas del Toro Province, N Panama. It is sympatric with *T. levis* throughout its range (Fig. 32).

## Biology

I collected this species along margins of ponds and marshy areas in Veracruz State, Mexico; SWD collected specimens at ponds, at Yeguari River with riffles and pools, and at a small stream partly dammed by road (label data). Common in marshes with dense grasses and cattails in Costa Rica; not in swamps or associated with floating vegetation (DRP pers. comm.).

## *Telebasis dominicana* (Selys in Sagra, 1857)

Figs 6g (♀ pthx); 13f (lig); 17f; 21d; 25j (app); 30 (map)

*Agrion dominicanum* Selys in Sagra, 1857: 466 (“♂ Saint-Domingue” [French edition]; 198 “♂ Santo Domingo (colección de Sélys)” [Spanish edition], in IRSN). *Agrion vulneratum* Hagen, 1861: 86 (in part, 2 ♂ from Cuba [Poey]). *Pyrrhosoma vulneratum* (Hagen). — Hagen (1867; probable misidentification). *Erythrargion dominicanum* Selys (1876: 958 (248 reprint); redescription ♂, ♀). *Telebasis dominicana* (Selys in Sagra). — Kirby (1890: 155; catalog).

## Lectotype designation

The original description in Latin is followed by the following statements (translated from the French): “It is perhaps the male of *Discolor* of Cuba. Twelve other species

of the same group occur in southern America and Carolina. Santo Domingo (collection de Selys)."

Syntypes consist of two males from Santo Domingo (Dominican Republic) although later Selys (1876: 959 [249 reprint]) included additional material from Cuba, Puerto Rico, and Guyana. In order to restrict the name to populations currently recognized as this species, I designate here a ♂ from Santo Domingo as lectotype.

#### Specimens examined

Lectotype ♂ and paralectotype ♂ (IRSN). Other specimens: Dominican Republic, San Cristobal Province: 1 ♂, 1 ♀, pond in sugar cane field, 9.5 km N Villa Altagracia on autopista Duarte, 02 vii 1984, leg. RWG; 1 ♂, Puerto Plata Province: Río Perez just E of Imbert, 06 viii 1983, leg. RWG; La Vega Province: 3 ♂, 1 ♀, pasture and small wet areas, 19.5 km NE of Jarabacoa (200 m), 15 iv 1981, leg. RWG; 1 ♂, 1 ♀, pond 4.5 km S of La Vega by Autopista Duarte, 16 iv 1981, leg. RWG; Distrito Nacional: 4 ♂, Arroyo Bermejo, 4 km NNE of Hatillo and Autopista Duarte, 14 iv 1981, leg. RWG. Puerto Rico, Municipio Carolina: 1 ♂, Carolina, ditch at junction of highway 26 and Campo Rico Avenue, 4 xi 1979, leg. J.A. Garrison; Municipio Manatí: 1 ♀, W end Laguna Tortuguero at highway 686, 07 i 1980, leg. RWG, J.A. Garrison; 1 ♂, same but 27 vii 1980; 2 ♂, 2 ♀, same but 21 vi 1981; Municipio Vega Baja: 1 ♂, SE end Laguna Tortuguero nr highway 587, 15 ix 1979, leg. RWG, J.A. Garrison; 7 ♂, 1 ♀, same but 18 xii 1979; 1 ♂, 1 ♀, same but 27 vii 1980; 3 ♂, 1 ♀, same but 16 i 1981; 2 ♂, same but 07 vi 1981; 7 ♂, 1 ♀, same but 07 vi 1981; 2 ♂, same but 18 xii 1979; 4 ♂, 1 ♀, same but 16 v 1982; Municipio Lajas: 1 ♂, 1 ♀, highway 306 just W of Laguna Cartagena S of highway 101, 30 viii 1980; 2 ♂ same but 14 ii 1982; Municipio Cidra: 3 ♂ Embalse de Cidra at highway 172 at bridge E of Cidra, 10 xi 1979; 9 ♂, same but 29 xii 1979; Municipio Santa Isabel: 1 ♂, Lago Coamo at dam nr highway 52 & 545 (48 m), 01 i 1980, leg. RWG, J.A. Garrison; 1 ♀, same but 19 xi 1981; 1 ♂ field nr Muñabo, 17 xi 1979, leg. RWG, J.A. Garrison (all RWG).

#### Diagnosis

This dark colored species is easily distinguished by its overall dark thoracic markings (as in Fig. 4n), male cerci approximate (Fig. 25j), and female prothoracic structure (Fig. 6g) as given in the key above.

#### Remarks

Garrison (1986b) compared size, female prothoracic morphology, and habitat preferences of this species with those of *T. vulnerata*. See under *T. vulnerata* concerning previous confusion of names with this species.

Controversy exists as to which edition (French or Spanish) of the "Histoire Physique, Politique et Naturelle de l'Île de Cuba..." predates the other. Evenhuis (1997: 679) states that "...there is no hard evidence that would indicate whether the Spanish or French version was published first..." and "...Until further evidence is found, I will follow common convention of treating both as published simultaneously." Calvert (1919: 345) stated that the Spanish edition had not been quoted by Selys himself, nor, as far as he was aware, by Hagen, Kirby, Muttowski, Ris, or any other author than Gundlach and that all subsequent writers, including Selys, have quoted from the French edition. I follow here traditional usage and give page number from the French edition for the original description.

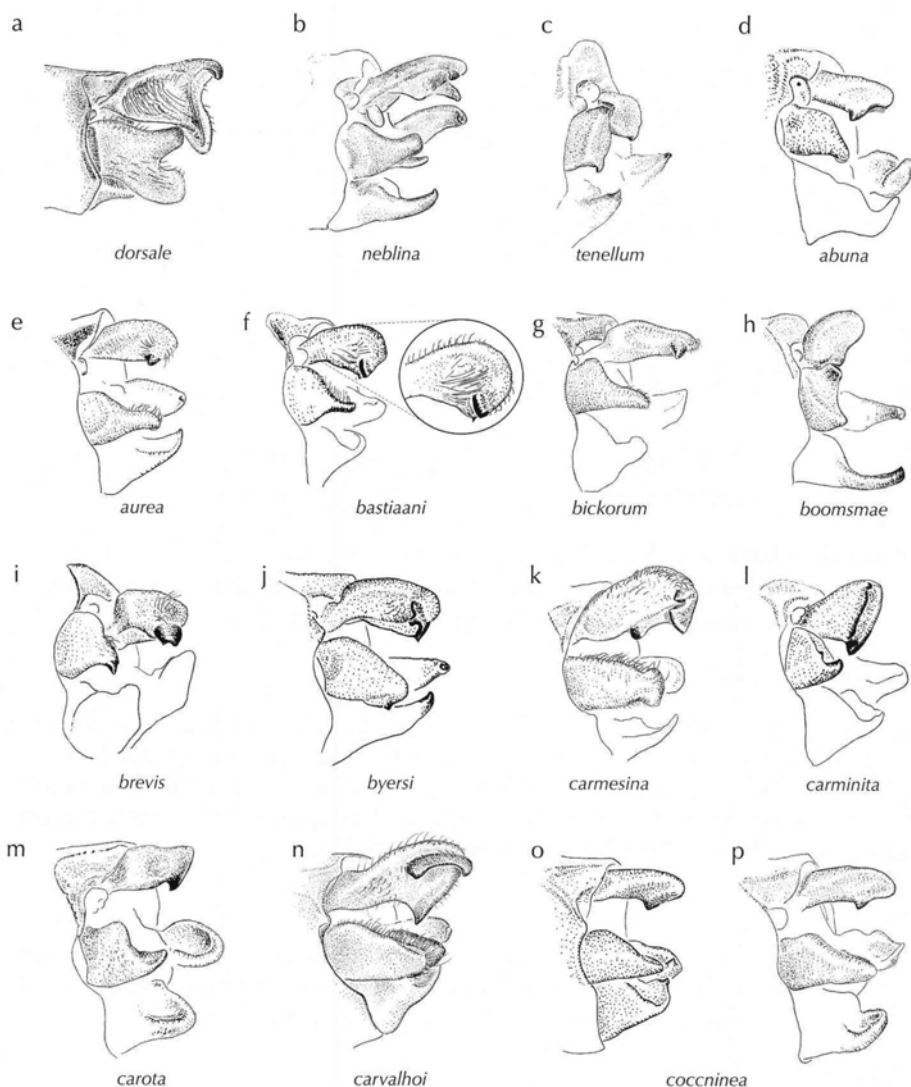


Figure 16: Male caudal appendages, medio-dorsal view — (a) *Aeolagrion dorsale*, Trinidad, St. Andrew (RWG); (b) *Tepuibasis neblina*, paratype, Venezuela, Neblina (RWG); (c) *Ceriagrion tenellum*, UK, Lyndhurst (RWG); (d) *Telebasis abuna*, holotype, Brazil, Abuna; (e) *T. aurea*, Costa Rica, S of San Vito; (f) *T. bastiaani*, paratype, Venezuela, W of Mantecal; (g) *T. bickorum*, paratype, Bolivia, S of Buena Vista; (h) *T. boomsmae*, Belize, Gallon Jug; (i) *T. brevis*, Ecuador, Cojimíes; (j) *T. byersi*, USA, FL, Alachua; (k) *T. carmesina*, Brazil, Jacarai; (l) *T. carminita*, Bolivia, Reyes; (m) *T. carota*, Ecuador, Río Jatun Yacu; (n) *T. carvalhoi*, holotype, Brazil, Paraupébas; (o) *T. coccinea*, lectotype, Brazil, Minas Gerais (IRS); (p) *T. coccinea*, syntype of *T. coccinata*, Brazil, Minas Gerais (MCZ).



## Distribution

Endemic to Greater Antilles and Virgin Islands (Fig. 30). Questionable records of this species from South America persist in the literature (e.g. Westfall & May 2006). However, I have seen no *bona fide* *T. dominicana* from anywhere in South America and I consider its occurrence there as extremely unlikely. Westfall & May (2006) listed the species with doubts from the Bahamas but I know of no specimens from that island group nor is it listed from there by Westfall (1960) or Dunkle (1990).

## Biology

A common species found at ponds and slow meandering streams in mostly open sunny areas as reported by Garrison (1986b).

### *Telebasis dunklei* Bick & Bick, 1995

Figs 6h (♂ pthx); 13g (lig); 17g; 21e (app); 37 (map)

*Telebasis dunklei* Bick & Bick, 1995: 26 (holotype ♂, allotype ♀, Peru, Loreto Department, Explorama Lodge, 80 km E of Iquitos, on Río Yanamono, 1 km upstream from Amazon, 30 viii 1989, leg. SWD, in IORI).

## Specimens examined

Peru, Loreto Department: 1 ♂, 1 ♀, Explorama Lodge, 80 km E Iquitos on Amazon River at junction with Yanamono River, Manatí River and pasture pond at lodge, 16 viii 1989, leg. SWD; 1 ♂, 1 ♀, same but 19 viii 1992; 3 ♂, 1 ♀, Explornapo Camp on Sucusari River nr Napo River about 160 km NE Iquitos, at Lorenzo, a black-water lake, 15 vii 1990, leg. SWD, A. Menke (all RWG).

## Diagnosis

Overall blue coloration coupled with distinctive pale medial process on ventral surface of cercus (Fig. 17g) uniquely identifies males. Blue coloration and angulate lateral pronotal lobe (an, Fig. 6h) serve to distinguish females.

## Remarks

I did not examine holotype and allotype in IORI but I did study specimens determined by Bick & Bick subsequently as *T. dunklei*.

## Distribution

Amazonian region of Ecuador from Napo Province south through Madre de Dios Department in Peru and Santa Cruz Department in Bolivia (Fig. 37). Likely present in neighboring Brazil.

## Biology

Label data record this species from black-water lake, pasture, and ponds. Present along outer edge of vegetation in oxbow lake ("cocha") in S Peru (DRP pers. comm.).

*Telebasis erythrina* (Selys, 1876)

Figs 2b (♂ head); 4i (♂ thx); 13h (lig); 17h; 21f; 25k (app); 43 (map)

*Agrion* (*Pyrrhosoma*) *erythrinum* Selys in Hagen, 1861: 311 (nomen nudum).

*Erythragrion erythrinum* Selys, 1876: 961 (251 reprint, "Minas Geraes, Quatre males (dont un complet). (Coll. Selys)." in IRSN).

*Telebasis erythrina* (Selys). — Kirby (1890: 155; catalog).

## Lectotype designation

Four syntype males (three incomplete) and one female are labeled as *Erythragrion erythrinum* in IRSN (von Ellenrieder & Garrison 2007); here I designate as lectotype a complete male labeled "Mg [written by Selys]", "*Telebasis erythrina* [written in pencil]", "Desseine par/Santos 6.x.64 [written]". As reported by von Ellenrieder & Garrison (2007), the female described by Selys (1876) is really that of *T. corallina*.

## Specimens examined

Lectotype ♂ and 3 ♂ paralectotypes. Other specimens: Brazil, Minas Gerais State: 1 ♂, Municipio Santa Bárbara, Private Reserve Peti, 18 x 1980, leg. P. Machado (ABMM).

## Diagnosis

This poorly known species is distinguished by its flavescent wings, and morphology of male appendages and genital ligula (Figs 13h; 17h; 21f; 25k). This combination of characters shows this species to be closely related to *T. theodori* (Figs 14p; 19a, b; 25t). Genital ligula in both has a pair of apical lobes (one directed anteriorly and another posteriorly) but the smaller more basal lateral lobe characteristic of *T. theodori* is lacking. Both (Figs 13h; 14p) have a well-developed chitinized semicircular tubercle at base of the long internal fold. In both species male cercus has a narrow vertical tooth which is covered posteriorly by a series of thick pale hairs, but distal end of cercus in medio-dorsal view is shorter in *T. theodori* (Figs 19a, b) than in *T. erythrina* (Fig. 17h). Male cerci superficially resemble those of *T. bickorum* and the two are diagnosed under that species. The female of *T. erythrina* is still unknown.

## Remarks

This poorly known species was not treated by Calvert (1909) or by Bick & Bick (1995, 1996). It was first figured by Lencioni (2006) using illustrations of the appendages of the lectotype by N. von Ellenrieder (figs 144A-C) and of the genital ligula by Lencioni (figs 144D, E); unfortunately, in figs 144D, E genital ligula is largely hidden and its structure largely obscured. I include here more detailed illustrations of a male collected by ABMM (Fig. 13h).

## Distribution

Minas Gerais State, Brazil (Fig. 43).

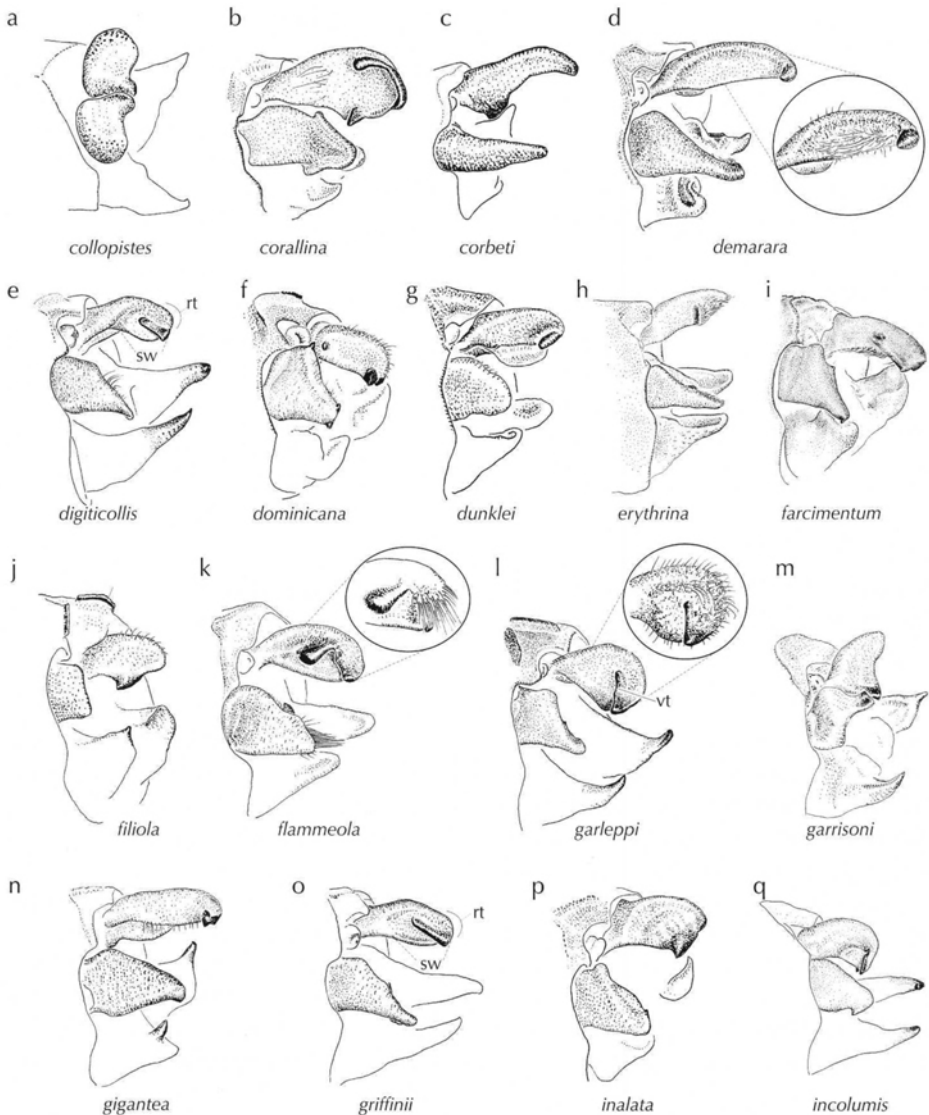


Figure 17: Male caudal appendages, medio-dorsal view — (a) *Telebasis collopistes*, Mexico, Tabasco; (b) *T. corallina*, Venezuela, Bejuma; (c) *T. corbeti*, paratype, Peru, Madre de Dios; (d) *T. demarara*, Trinidad, Edward Trace; (e) *T. digiticollis*, Mexico, Catemaco; (f) *T. dominicana*, Puerto Rico, Tortuguero; (g) *T. dunklei*, Peru, Explorama; (h) *T. erythrina*, Brazil, Peti; (i) *T. farcimentum*, holotype, Colombia, Valle de Cali; (j) *T. filiola*, Venezuela, Tucacas; (k) *T. flammeola*, paratype, Ecuador, Río Yanananaca; (l) *T. garleppi*, Costa Rica, Tapanti; (m) *T. garrisoni*, Colombia, El Banco; (n) *T. gigantea*, Bolivia, S of Buena Vista; (o) *T. griffinii*, Ecuador, E of Coca; (p) *T. inalata*, Peru, Explorama; (q) *T. incolumis*, Mexico, Baja California. rt: rounded tip; sw: swollen; v.t.: vertical tooth.

*Telebasis farcimentum* sp. nov.

Figs 4j (♂ thx); 6i (♀ pthx); 13i (lig); 17i; 21g (app); 39 (map)

## Etymology

From *farcimentum* = sausage (Latin), a noun in apposition, referring to the sausage-shaped cercus when seen in medio-dorsal view (Fig. 17i).

## Specimens examined

Colombia, Valle del Cauca Department: ♂ holotype, Cali (3°26'14"N, 76°31'21"W), 01 viii 1972, leg. N.B. Stiles (FSCA); 2 ♂, 1 ♀ paratypes: 1 teneral ♂, Buga, Laguna de Sonso, 16 iv 1986, leg. M. Suarez T. (TWD); Quindio Department: 1 ♂, Municipio Tebeida, Humedal Maravelez (4°27'26"N, 75°39'15"W, 1000 m), iv 2002, leg. Zuluaga, Gomez, García (MIZA); 1 ♀, same but 14 xii 2002 (MIZA).

## Male holotype

**Head:** Labium pale ochre, entire face light blue, blue-brown on anteclypeus; epicranium dark metallic black with following dull orange: antefrons, diagonal arm extending from ocellar triangle to base of antenna, occipital bar; antennifer, scape, pedicel (flagella missing); rear of head pale ochre.

**Thorax:** Prothorax orange, becoming paler laterally, darkened with brown at dorso-lateral depressions on middle lobe of prothorax; thoracic carina orange, medial 0.50 of mesepisternum metallic black, remainder of mesepisternum pale blue, mesepimeron and mesenfraepisternum orange, remainder of synthorax including venter of thorax and base of coxae pale ochre (Fig. 4j). Legs ocher with wash of brown on posterior margins of femora, tibial spurs longer than interval between them, tarsi pale, dark at extremities, armature black. Wings hyaline, Px Fw 11(left) / 10(right); Px Hw 10(left) / 9(right); RP<sub>2</sub> originating at Px 5 in Fw, at Px 4 in Hw; pterostigma orange brown, rhomboidal, surmounting one cell.

**Abdomen:** S1-10 entirely red dorsally, paler ventrally, with apical 0.10 of S4-7 smudged with black. Genital ligula (Fig. 13i) longer than wide, narrow, with apical 0.33 broadened to form semicircular tip whose lateral margins end beneath lateral margin; inner fold extending ca 0.33 length of basal segment; chitinized tubercle at genital ligula flexure absent. Cerci orange at base becoming black distally, paraprocts orange. Cercus in lateral view (Fig. 21g) slightly longer than paraproct, linear and angulate at mid-length, bidentate tooth visible at ventro-posterior margin; cercus in medio-dorsal view (Fig. 17i) curved, sausage-shaped, dorsal and ventral margins parallel, an isolated medially directed tooth at 0.50 and a weakly bidentate tooth at tip with anterior margin extending and ending as a dark slightly raised area just ventral to median tooth; a series of thick appressed hairs along ventro-medial margin. Paraproct bluntly rounded, polished and cup-shaped dorsally.

**Dimensions:** Hw 18, abd 29.

## Female paratype (juvenile)

Head and thorax similar to male but pale color entirely ochraceous brown, metallic markings on epicranium less extensive than in holotype; middle lobe of prothorax with a pair of flattened anteriorly directed horns extending to just before dorso-lateral depression on middle lobe (Fig. 6i), a sparse set of blonde posteriorly directed

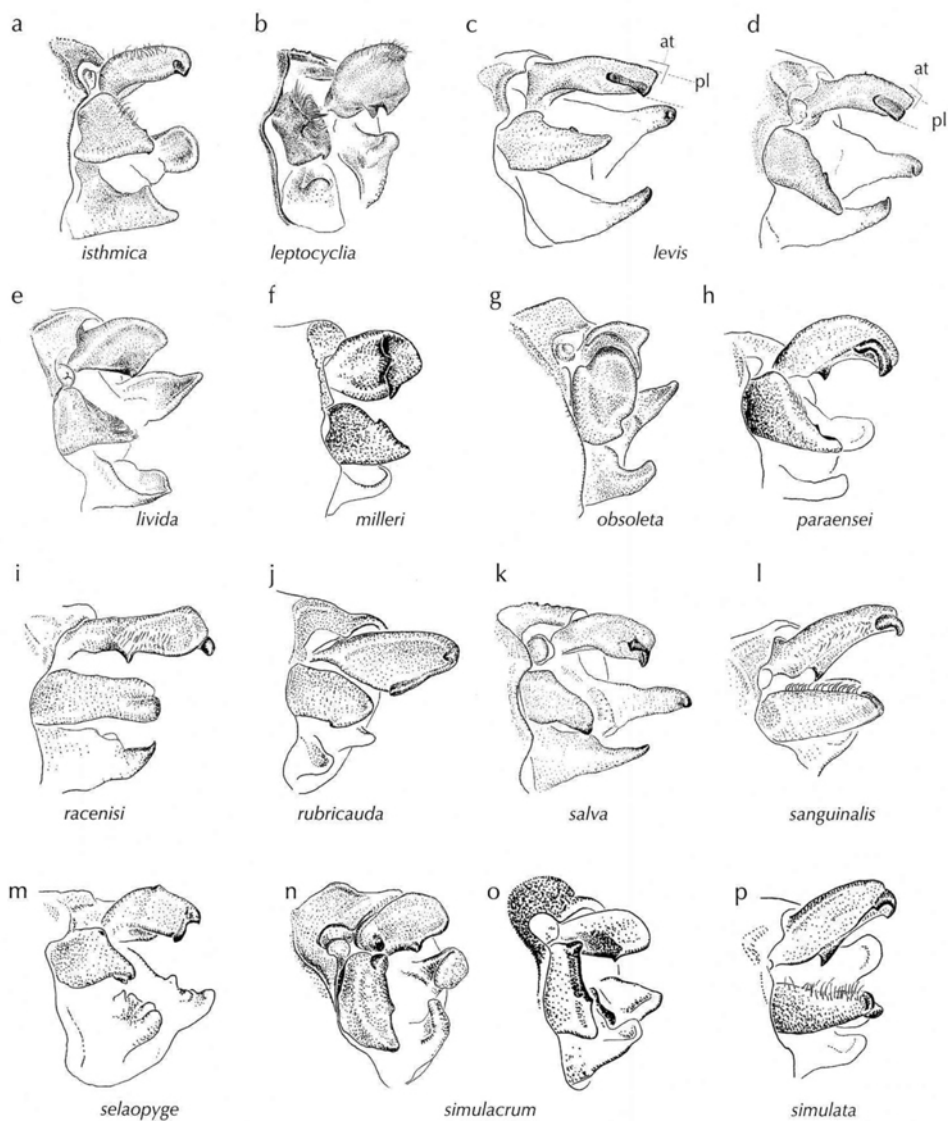


Figure 18: Male caudal appendages, medio-dorsal view — (a) *Telebasis isthmica*, Venezuela, Tucacas; (b) *T. leptocyclia*, Brazil, Abuna; (c) *T. levis*, holotype, Guatemala; (d) *T. levis*, paratype, Mexico, Río Mayo; (e) *T. livida*, Peru, Atalaya; (f) *T. milleri*, Peru, Pakitza; (g) *T. obsoleta*, lectotype, BNHM; (h) *T. paraensei*, Brazil, Coronel Fabriciano; (i) *T. racenisi*, paratype, Venezuela, Puerto Ayacucho; (j) *T. rubricauda*, Bolivia, E of Tunari; (k) *T. salva*, New Mexico, Red Rock; (l) *T. sanguinalis*, Bolivia, Velasco; (m) *T. selaopyge*, Venezuela, San Carlos; (n) *T. simulacrum*, lectotype, Brazil, Cuiaba; (o) *T. simulacrum*, paratype of *T. lacustris*, Bolivia, Espíritu Río Yacuma; (p) *T. simulata*, Brazil, Manaus. at: angulate tip; pl: parallel-sided.

hairs covering the depression; posterior lobe with middle part semicircular, decumbent posteriorly, lateral margin separate from middle lobe and almost meeting mid-dorsally, strongly erect (Fig. 6i); mesostigmal plate triangular, bordered posteriorly by a diagonal costate rim with its middle portion flexed posteriorly; a slight diagonal depression immediately posterior to medial margin of mesostigmal plate. Remainder of synthorax as in male, but with yellow ochre replacing orange.

Wings as in male, Px Fw 11; Px Hw 9(left)/ 10(right);  $RP_2$  originating at Px 5 in Fw, at 4 Px in Hw. Abdomen entirely ochre, paler below; with apical 0.10 of S4-6 darker especially around annuli; cerci dull brown. Dimensions: Hw 18, abd 30.

#### Variation in male paratypes

One male is teneral and no body pattern is evident; relaxation of the appendages and examination of the genital ligula confirm species identity. No color differences were noted between the other paratype male and the holotype. Px Fw 10-11, Px Hw 9-10; origin of  $RP_2$  in Fw at Px 5, in Hw at Px 4; Hw 17; abd 27; abdomen of one paratype incomplete.

#### Diagnosis

Shape of male cerci (Figs 17i; 21g) and round disc-like tip of genital ligula (Fig. 13i) easily distinguish the male from all other species. Well-developed female prothoracic horns coupled with large transversely oval swelling along the antero-lateral margin of female metepisternum uniquely separate this species from all others. Males and females are further diagnosed in keys M-3, Ma-5, and Key F-6.

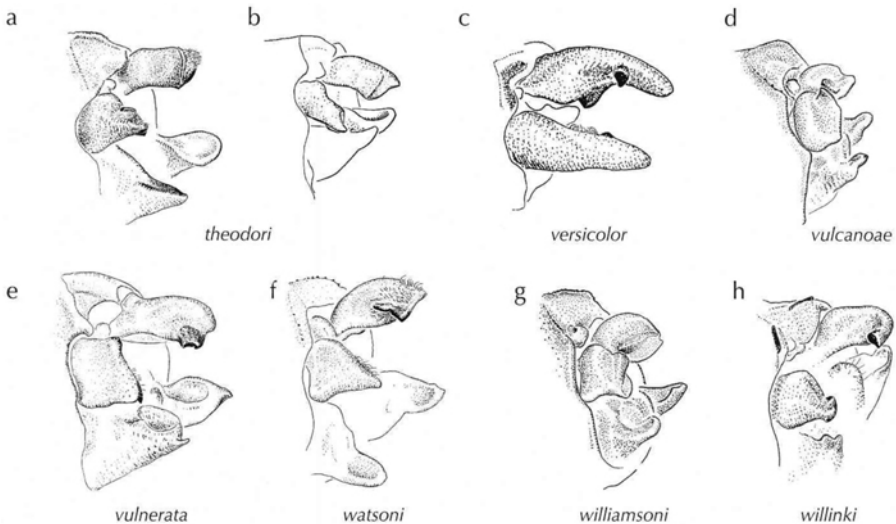


Figure 19: Male caudal appendages, medio-dorsal view — (a) *Telebasis theodori*, Brazil, Nova Teutonia; (b) *T. theodori*, paratype of *T. aureipennis*, Argentina, Parque Nacional Iguazú; (c) *T. versicolor*, Ecuador, Reserva Waorani; (d) *T. vulcanoae*, paratype, Brazil, Lago do Bispo; (e) *T. vulnerata*, Dominican Republic, Jarabacoa; (f) *T. watsoni*, Peru, Chapajilla; (g) *T. williamsoni*, holotype, Colombia, El Banco; (h) *T. willinki*, Argentina, Buenos Aires.

## Remarks

I include here the juvenile female as belonging to this species as it is similar to the male in stature and body coloration. Its collection at the same locality as a paratype further indicate that they are conspecific. I consider the curled condition of the posterior margin of the erect mesostigmal plate as a natural condition for this species (rather than a postmortem effect) since it appears symmetrical on both sides. The sparse set of blonde posteriorly directed hairs covering the dorso-lateral depressions of the middle lobe of the prothorax are apparently a unique feature within this genus.

## Distribution

Quindio and Valle del Cauca Departments, Colombia (Fig. 39).

*Telebasis filiola* (Perty, 1834)

Figs 6j (♀ pthx); 13j (lig); 17j; 21h; 25l (app); 34 (map)

*Agrion filiola* Perty, 1834: 125 (description probable ♂ from "...in montibus Prov. Minarum [mountains of coastal province];" type lost).

*Erythrargrion filiola* (Perty). — Selys (1876: 956 (246 reprint); redescription ♂, ♀).

*Telebasis filiola* (Perty). — Kirby (1890: 155; catalog).

## Neotype designation

The color figure accompanying the original description (Perty 1834) suggests that the type, now apparently lost (Burmeister 1983) was a male and hailed from Minas Gerais State, Brazil (Selys 1876: 958). With subsequent descriptions of *T. inalata* and *T. willinki*, and possible sympatry among them, I wrote to A.B.M. Machado, long familiar with the Odonata fauna of the region, concerning his opinion of the type locality for *T. filiola*. He very kindly responded citing the itinerary of the Bavarian naturalists J.B. von Spix and K.F.P. von Martius based on Papavero (1971: 65-69):

"Perty's summary description of *Agrion filiola* on page 125 of the *Delect Anim. Articul.* 1834 was based on a specimen collected at mountains of the province of Minas Gerais. Therefore there is no doubt that the type specimen is from the now State of Minas Gerais collected by Spix and Martius. The problem is to try to find where in Minas Gerais the species could have been collected. The fact that it was collected in mountain is of little help because the expedition entered Minas Gerais by the south, crossed the large Mantiqueira mountain range, went straight north in low altitude areas covered with the Atlantic forest and more north with Cerrado (a sort of savanna). After São João Del Rey it continued north following the large mountain range of Espinhaço with villages as Ouro Preto, Diamantina and Minas Novas. It then crossed the Espinhaço and the São Francisco river, crossed the plane areas of Carinhanha river and entered Bahia. In order to try to match this itinerary with the distribution of *T. filiola* in Minas Gerais I went over my collection and verified that *T. filiola* is widespread in Minas Gerais but mainly in low altitude areas. So far, in mountains we have found only species with the rear of the head pale and quite different from *filiola*. Since a lot of mountains in the itinerary of Spix and Martius were not searched for Odonata one could not rule out the possibility that the species might be found there. As the itinerary of the expedition

went mainly through mountainous regions I think the mention of “the mountains of Minas Gerais” should not be taken too strictly and the species could have come from plain areas as well. Another important issue that you raised was the possibility that, together with *filiola* other species easily confused with it like *T. inalata*, might occur in Minas Gerais and be collected by the expedition. Here I have to congratulate you because your guess was correct. In envelopes containing specimens that I had identified as *T. filiola* collected by myself in the land of the Maxacali Indians in Northeastern Minas Gerais 50 years ago I found both *filiola* and *inalata* [should be *T. willinki*; specimens examined]. They shared the same habitat, flooded areas from a river. Thus, in spite of the fact that the typical *filiola* is much more common in Minas Gerais, one cannot rule out the possibility that Perty's type was *T. inalata*.”

In order to preserve the current concept of this species, I designate as neotype a male from Brazil, Minas Gerais State, Caeté, ii 1970, leg. ABMM (ZSM).

#### Specimens examined

Mexico, Jalisco State: 2 ♂, Arroyo Chamela, 26 vii 1994, leg. E. González S., R. Mendoza, A. Godinez (RWG); Veracruz State: 1 ♂, pond 13 km S of La Tinaja, 13 viii 1976, leg. RWG, J.A. Garrison (RWG). Panama, Panama Province: 1 ♂, Pedro Miguel, ponds, 10 viii 1970, leg. TWD, E.S. Morton (RWG); 4 ♂, Balboa, entrance to Panama Canal, small stagnant pond, 30 vii 1979, leg. RWG, J.A. Garrison (RWG). Colombia, Bolivar Department: 1 ♂, 1 ♀, Bolivar, 26 xii 1916, leg. J.H., E.B. Williamson (RWG); Magdalena Department: 2 ♂, Santa Marta, 19 xii 1916, leg. J.H., E.B. Williamson (RWG). Venezuela, Aragua State: 9 ♂, 5 ♀, Lago Taguaiguai, on Cagua road (480 m), 19 ix 1980, leg. RWG, J.A. Garrison (RWG); Falcon State: 4 ♂, 2 ♀, Tucacas, 23 iii 1920, leg. J.H., E.B. Williamson, W.H. Ditzler (RWG); Carabobo State: 4 ♂, Bejuma, 16 ii 1920, J.H., E.B. Williamson, W.H. Ditzler (RWG). Brazil, Minas Gerais State: 1 ♂, Mocambinho, Jaiba, Brejo na Mata da Agroceres, 25 x 1992, leg. A.L. Carvalho (RWG); Rio de Janeiro State: 4 ♂, 2 ♀, Parque Chico Mendez, Recreio dos Bandeirantes, km 18 da Avenida das Americas, 25 xi 2000, leg. RWG, J. Costa, (RWG); 1 ♂, Angra dos Reis, Bracui, near Rio Gratau, 13 v 2002, leg. A.L. Carvalho (RWG); 1 ♂, Teresopolis, Do Garrafeo beach, 1999, leg. P.C.W. Carvalho (MNRJ); Espirito Santo State: 1 ♂, Conceição da Barra (in forest), x 1972, M. Alvarenga (RWG).

#### Diagnosis

This species is closely-related to *T. inalata* and *T. willinki* by overall size, coloration, genital ligula shape (Figs 13j, p; 15f), and morphology of appendages (Figs 17j, p; 19h; 21h, n; 22r). Males of *T. filiola* and *T. willinki* have an elevated black ridge on each side along postero-dorsal margin of S10 (Figs 17j; 19h; 25l, x) which is absent in *T. inalata* (Fig. 17p). In lateral view, cercus of *T. filiola* (Fig. 21h) is distinctly shorter than paraproct; it is subequal to paraproct in *T. willinki* (Fig. 22r), and longer than paraproct in *T. inalata* (Fig. 21n). Tip of cercus of *T. willinki* in medio-dorsal view is rounded (Fig. 19h), not broadly quadrate as in *T. filiola* and *T. inalata* (Figs 17j, p). Females of all three species are similar in thorax coloration, small size, ovipositor extending beyond posterior margin of S10, and presence of a supplementary transverse carina on S10 (Fig. 26d); they are separated in Key F-2.



## Distribution

Widespread from Tamaulipas and Nayarit States along W and E foothills of Mexico south through Central America, and east to Colombia and Venezuela, then discontinuously along E South America through SE Brazil (Fig. 34).

## Remarks

Although Bick & Bick (1995: 27) stated that *T. "filiola"* is widespread from Mexico to Venezuela..., it occurs much further south (type locality is Minas Gerais, Brazil, or near). The characters listed by Bick & Bick will not work in separating among males of the three species discussed above. This species is apparently allopatric with *T. willinki* in São Paulo State, SE Brazil (Fig. 34). Paulson (1982: 260) lists this species from the "Lesser Antilles (Anguilla to Grenada)" but he (pers. comm.) informed me that this was erroneous.

## Biology

This is a common pond species. In Venezuela I collected a series of adults as they rested on mats of *Azolla*. Their small size and rapidity of flight from mat to mat made them difficult to see so that the brilliant red abdomen was not as conspicuous as one might expect. Commonly associated with mats of *Pistia* (DRP pers. comm.).

### *Telebasis flammeola* Kennedy, 1936

Figs 6k (♀ pthx); 13k (lig); 17k; 21i (app); 31 (map)

*Telebasis flammeola* Kennedy, 1936: 804 (holotype ♂, Ecuador, Pastaza Province [Oriente Province on envelope], Río Yanamanaca, El Partidero, "which flows into the Río Anzu 2-3 days by foot above town of Napo which is just below the junction of the Río Jatun Yacu and Río Anzu which form the Río Napo.," 02 xi 1935, leg. W. Clarke-McIntyre, in UMMZ).

## Specimens examined

Holotype ♂ (UMMZ). Other specimens: Ecuador, Pastaza Province: 2 ♂, Yanamanaca [next Indian village up Río Anzu from Yanamanaca is El Partidero], 29 ix 1935, leg. W. Clarke-MacIntyre (RWG); Napo Province: 2 ♂, 1 ♀, Río Sinde pond, 6 km E Puerto Napo, 12 xi 1997, leg. KJT (KJT; RWG).

## Diagnosis

The V-shaped apical tooth of male cercus, with elongate and tear-shaped anteriorly directed branch (Fig. 17k), coupled with the narrow, bifid whip-like apical segment of genital ligula (Fig. 13k), is distinctive for this species. As mentioned by Kennedy (1936) and Bick & Bick (1995), the tip of cercus normally has a cone of pale bristles. The single known female (collected in tandem with the male) has short broad spatulate prothoracic horns and arched auricle-like swellings just behind mesostigmal lobe (Fig. 6k), and is diagnosed in Key F-7.

## Distribution

Amazonian region of Napo and Pastaza Provinces in Ecuador (Fig. 31).

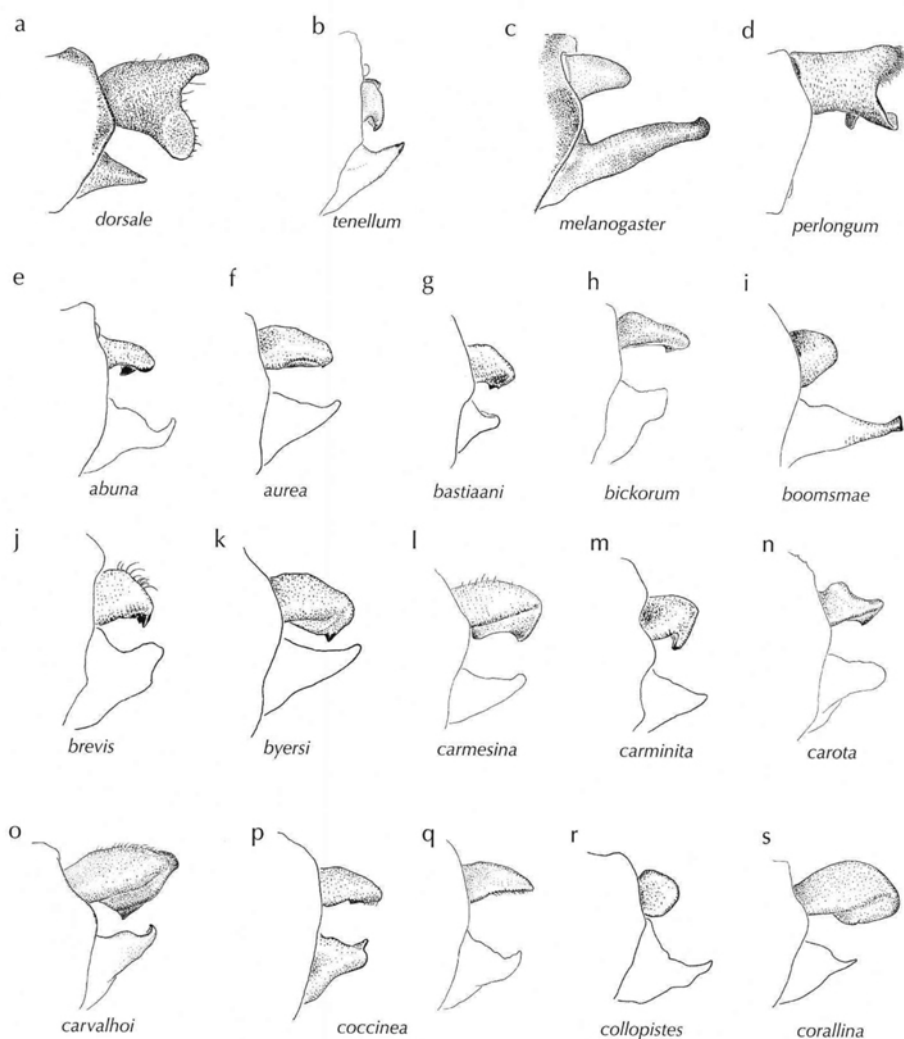


Figure 20: Male caudal appendages, lateral view — (a) *Aeolagrion dorsale*, Trinidad, St. Andrew (RWG); (b) *Ceriagrion tenellum*, UK, Lyndhurst (RWG); (c) *Diceratobasis melanogaster*, Dominican Republic, Constanza (RWG); (d) *Leptagrion perlongum*, Brazil, Castelo (RWG); (e) *Telebasis abuna*, holotype, Brazil, Abuna; (f) *T. aurea*, Costa Rica, S of San Vito; (g) *T. bastiaani*, paratype, Venezuela, W of Mantecal; (h) *T. bickorum*, paratype, Bolivia, S of Buena Vista; (i) *T. boomsmae*, Belize, Gallon Jug; (j) *T. brevis*, Ecuador, Cojimies; (k) *T. byersi*, USA, FL, Alachua; (l) *T. carmesina*, Brazil, Jacarai; (m) *T. carminita*, Bolivia, Reyes; (n) *T. carota*, Ecuador, Río Jatun Yacu; (o) *T. carvalhoi*, holotype, Brazil, Paraupebas; (p) *T. coccinea*, lectotype, Brazil, Minas Gerais (IRSN); (q) *T. coccinea*, syntype of *T. coccinata*, Brazil, Minas Gerais (MCZ); (r) *T. collopistes*, Mexico, Tabasco; (s) *T. corallina*, Venezuela, Bejuma.

## Biology

A pond species (label data).

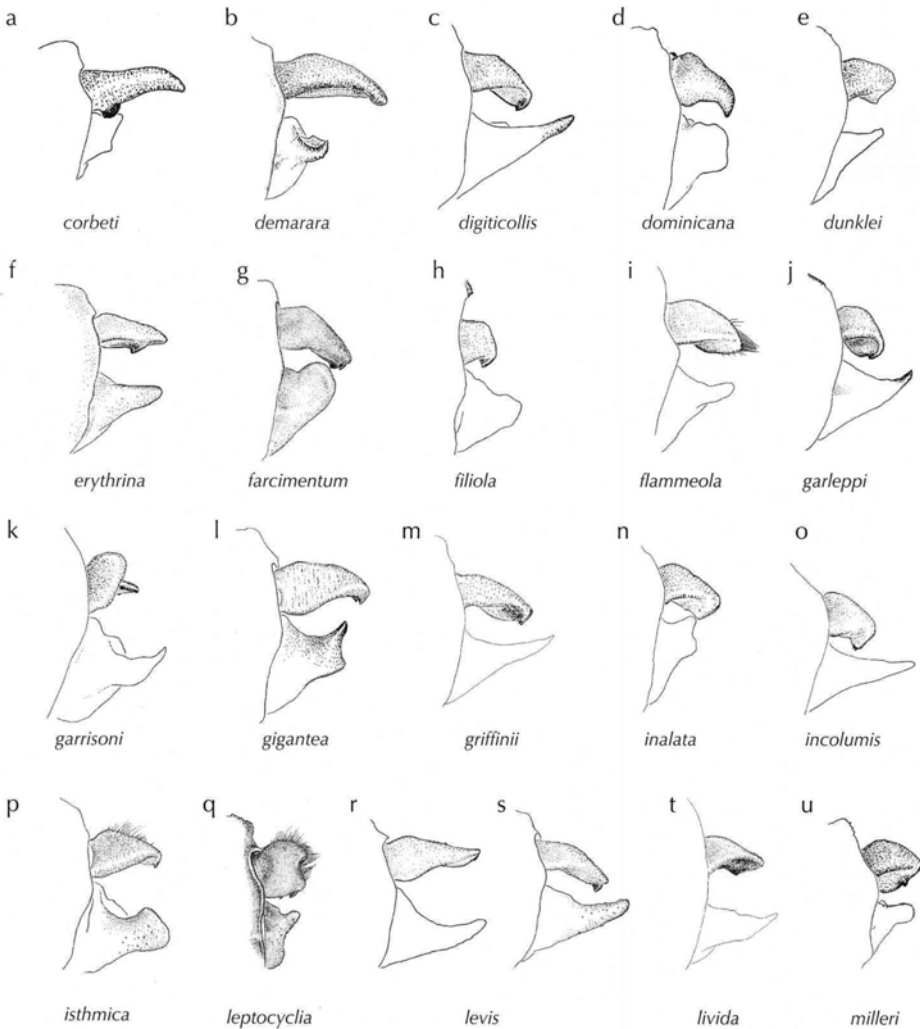


Figure 21: Male caudal appendages, lateral view — (a) *Telebasis corbeti*, paratype, Peru, Madre de Dios; (b) *T. demarara*, Trinidad, Edward Trace; (c) *T. digiticollis*, Mexico, Catemaco; (d) *T. dominicana*, Puerto Rico, Tortuguero; (e) *T. dunklei*, Peru, Explorama; (f) *T. erythrina*, Brazil, Peti; (g) *T. farcimentum*, holotype, Colombia, Valle de Cali; (h) *T. filiola*, Venezuela, Tucacas; (i) *T. flammeola*, paratype, Ecuador, Río Yanananaca; (j) *T. garleppi*, Costa Rica, Tapanti; (k) *T. garrisoni*, Colombia, El Banco; (l) *T. gigantea*, Bolivia, S of Buena Vista; (m) *T. griffinii*, Ecuador, E of Coca; (n) *T. inalata*, Peru, Explorama; (o) *Telebasis incolumis*, Mexico, Baja California; (p) *T. isthmica*, Venezuela, Tucacas; (q) *T. leptocyclus*, Brazil, Abuna; (r) *T. levis*, holotype, Guatemala; (s) *T. levis*, paratype, Mexico, Río Mayo; (t) *T. livida*, Peru, Atalaya; (u) *T. milleri*, Peru, Pakitza.

*Telebasis garleppi* Ris, 1918

Figs 6l (♀ pthx); 13l (lig); 17l; 21j (app); 36 (map)

*Telebasis garleppi* Ris, 1918: 129 (4 ♂ syntypes, Costa Rica, Turrialba, Tuis, 1000 m, 1913, in SMF).

## Specimens examined

Costa Rica, Alajuela Province: 5 ♂, Río San Lorencito and tributaries, Reserva Forestal San Ramón (10°12'57"N 84°36'25"W), 13-16 vi 1988, leg. C.M., O.S. Flint Jr., R.W. Holzenthal (RWG); Cartago Province: 2 ♂, 1 ♀, marsh & stream at Tapanti (Reserve), 17 viii 1966, DRP, M.L. Paulson (DRP; RWG); 1 ♂, same but 23-25 vi 1967, leg. O.S. Flint Jr., M.A. Ortiz B. (RWG). Colombia, Valle del Cauca Department: 1 ♂ lacking appendages, La Concepción, Río Naya, vi 1996, leg. C. Hurtado (TWD). Ecuador, Esmeraldas Province: 1 ♂, seepage pool 36.5 km NW of Lita, near Urbina, noon, 03 ii 1997, leg. JJD (JJD).

## Diagnosis

One of the largest species, whose round cerci with a near vertical tooth (vt, Fig. 17l), and genital ligula with a long inner fold uniquely characterize males. Large size (Hw ≥ 22, abd ≥ 32), and upturned prothoracic horns (Fig. 6l) will allow recognition of female as given in Key F-7.

## Remarks

The female illustrated here (Fig. 6l) was collected in tandem with the male.

## Distribution

Costa Rica, Colombia, and Ecuador (Fig. 36).

## Biology

Taken at ponds, marshes, and seepage pools (label data). Common in marsh with dense grasses and sedges in Costa Rica (DRP pers. comm.).

*Telebasis garrisoni* Bick & Bick, 1995

Figs 6m (♀ pthx); 13m (lig); 17m; 21k; 24c; 25m (app); 38 (map)

*Telebasis garrisoni* Bick & Bick, 1995: 28 (holotype ♂, allotype ♀, Colombia, Magdalena Department, El Banco, 25 i 1922, leg. J.H., E.B. Williamson, in UMMZ).

## Specimens examined

Colombia, Antioquia Department: 4 ♂, 1 ♀ paratypes, Las Delicias, 28 i 1917, leg. J.H., E.B. Williamson; Magdalena Department: 2 ♂, El Banco, 23 i 1917, leg. J.H., E.B. Williamson; 3 ♂, 3 ♀, same but 25 i 1917. Venezuela, Falcon State: 1 ♂, Tucacas, 25 iii 1920, leg. J.H., E.B. Williamson, W. Ditzler, H. Baker; Zulia State: 1 ♂, El Guayabo, 22 iv 1920, leg. J.H., E.B. Williamson, W.H. Ditzler (all RWG).

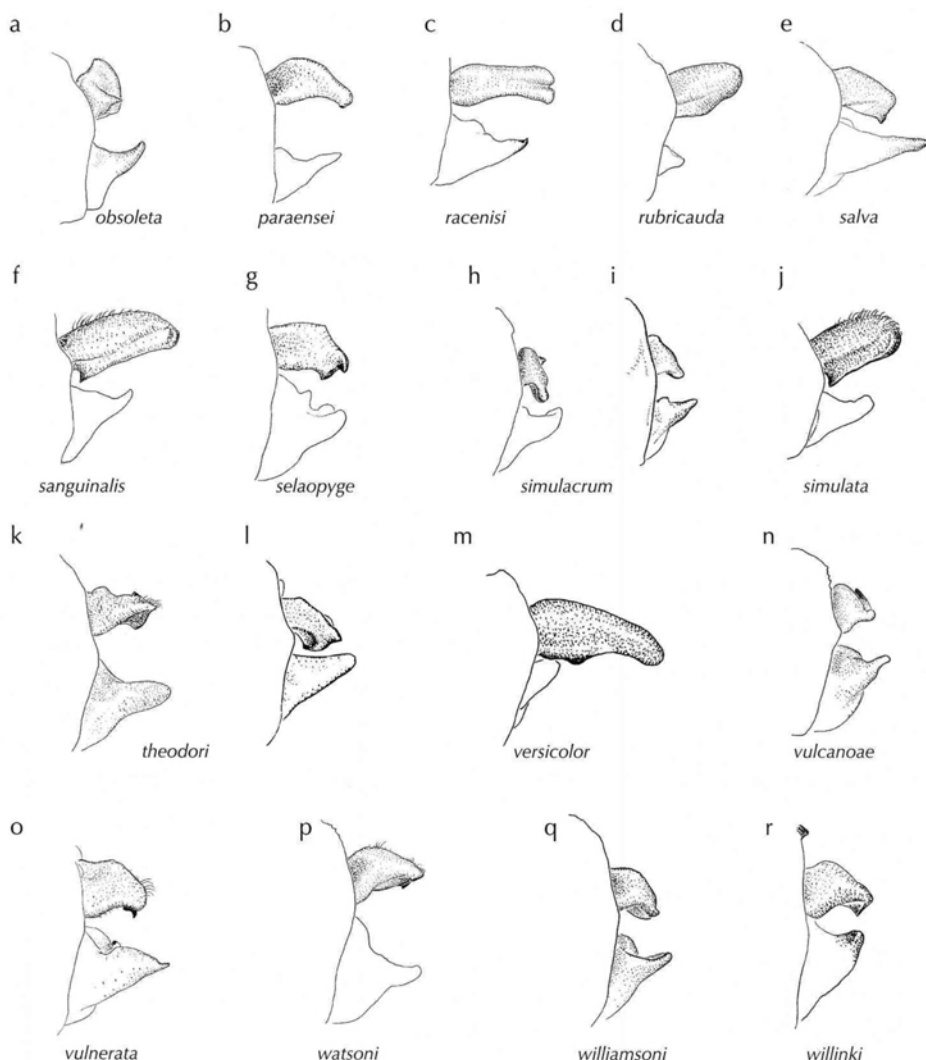


Figure 22: Male caudal appendages, lateral view — (a) *Telebasis obsoleta*, lectotype, BNHM; (b) *T. paraensei*, Brazil, Coronel Fabriciano; (c) *T. racenisi*, paratype, Puerto Ayacucho; (d) *T. rubricauda*, Bolivia, E of Tunari; (e) *T. salva*, New Mexico, Red Rock; (f) *T. sanguinalis*, Bolivia, Velasco; (g) *T. selaopyge*, paratype, Venezuela, Puerto Ayacucho; (h) *T. simulacrum*, lectotype, Brazil, Cuiaba; (i) *T. simulacrum*, paratype of *T. lacustris*, Bolivia, Espíritu Río Yacuma; (j) *T. simulata*, Brazil, Manaus; (k) *T. theodori*, Brazil, Nova Teutonia; (l) *T. theodori*, paratype of *T. aureipennis*, Argentina, Parque Nacional Iguazú; (m) *T. versicolor*, Ecuador, Reserva Waorani; (n) *T. vulcanoae*, paratype, Brazil, Lago do Bispo; (o) *T. vulnerata*, Dominican Republic, Jarabacoa; (p) *T. watsoni*, Peru, Chapajilla; (q) *T. williamsoni*, holotype, Colombia, El Banco; (r) *T. willinki*, Argentina, Buenos Aires.

## Diagnosis

Male of this distinctive species has approximate cerci which bear a unique, quadrate, medially-directed tooth (Figs 17m; 21k; 24c; 25m) which will separate it from all other congeners. Overall red coloration, rear of head black, and adjacent mesepisternal pits separated by a sinus (Fig. 6m) as indicated in Key F-1 will separate female from all other species.

## Remarks

Type locality (El Banco) is described (Williamson 1923) as an area with "... no flowing water near town except the rivers. Along the isolated pools of a wet weather stream in a forest strip surrounded by dry, treeless plain we found a few species of dragonflies, some in large numbers."

## Distribution

N of Colombia and Venezuela; all records save one date from the Williamson expeditions of 1917 and 1920. It will likely be discovered in the Darien region of E Panama (Fig. 38).

## *Telebasis gigantea* Daigle, 2002

Figs 2c (♂ head); 6n (♀ pthx); 11b (♂ wings); 13n (lig); 17n; 21l (app); 37 (map)

*Telebasis gigantea* Daigle, 2002a: 28 (holotype ♂, allotype ♀, Bolivia, Santa Cruz Department, Ichilo Province, pond 3.5 km S of Buena Vista, Claude's pond, 07 ii 2000, leg. JJD, in UASC).

## Specimens examined

Bolivia, Beni Department: 2 ♂, 2 ♀, Trinidad, forest N to city, 21 viii 2003, leg. FAL; Santa Cruz Department: 1 ♂ paratype, Ichilo Province, pond 3.5 km S of Buena Vista, Claude's pond, 07 ii 2000, leg. JJD; 1 ♂, same but 05 ii 2001, leg. KJT (all RWG).

## Diagnosis

This species is among the largest of the genus along with *T. aurea* and *T. garleppi*, and differs from the latter two by its overall pale coloration (orange in *T. aurea*, red in *T. garleppi*) and morphology of the appendages (Figs 17n; 21l). The black of epi-

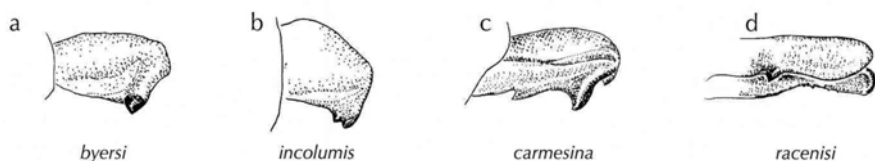


Figure 23: Male caudal appendages, medio-ventral view — (a) *Telebasis byersi*, USA, FL, Alachua; (b) *T. incolumis*, Mexico, Baja California; (c) *T. carmesina*, Brazil, Jacarai; (d) *T. racenisi*, paratype, Venezuela, Puerto Ayacucho.

cranium is confined to lateral margin of compound eye, postfrontal suture, and cleavage line (ocellar crown) thus exposing large pale postocular spots confluent with pale region at rear of head (Fig. 2c); the entire epicranium in *T. aurea* and *T. garleppi* is black. Combination of large size and lack of prothoracic horns in female of *T. gigantea* (Fig. 6n) separate this species from all others.

#### Remarks

Daigle (2002a: 75) cited a total length of 45.8, 40.0 for abd, 26.0 for Fw, and 24.5 for Hw in holotype male which must be in error as none of the specimens I have examined exceeds 42, 34, 21, and 20 respectively, and those measurements far exceed ranges he gave for paratypes.

This species is unusual by the small, narrow, hook-like apical segment of genital ligula (Fig. 13n), and by its less angled frons compared to any other species with which I am familiar. Concordance of morphological features of male appendages, female prothorax, and overall coloration suggest that the species is correctly placed within *Telebasis*.

#### Distribution

Santa Cruz and Beni Departments in Bolivia (Fig. 37).

#### Biology

Recorded (Daigle, 2002a) as a "late afternoon species, appearing between 4:30 and 5:30 pm in the shaded areas along margins of two ponds."

### *Telebasis griffinii* (Martin, 1896)

Figs 4k (♂ thx); 6o, p (♀ pthx); 13o (lig); 18d; 21m (app); 27 (♂ holotype); 32 (map); Plate 1b (♂)

*Erithragrion griffinii* Martin, 1896: 2 (holotype ♂, "Prise au Darien [Panama], sur une lagune," in MIZT); — Geijskes (1932: 257, records from Sangre Grande, Trinidad).

*Telebasis griffinii* (Martin). — Calvert (1902: 117; citation of type from Panama, not seen).

*Telebasis limoncocha* Bick & Bick, 1995: 118 (holotype ♂, allotype ♀, Ecuador, Napo Province, Limoncocha, Lake Taracoa near Primavera, 04 xi 1980, leg. M.J. Westfall, D.G. Robinson, H.H. Smith, in FSCA); **syn. nov.**

#### Specimens examined

Panama, Panama Province: 1 ♂, Pedro Miguel, summit gardens, 10 viii 1970, leg. E.S. Morton (FSCA); 1 ♂, same but 08 v 1970 (FSCA); 1 ♂, same but 23 v 1970 (FSCA); 1 ♂, same but 11 iv 1970 (FSCA); 1 ♂, same but 10 viii 1970, leg. TWD, E.S. Morton (FSCA); 1 ♂, same but 22 i 1973, leg. MLM (MLM); 1 ♂, same but 01 iv 1974 (FSCA); 1 ♂, same but 01 v 1974 (MLM); 1 ♂, same but 02 vi 1981 (MLM); 1 ♂, same but pond near Pacific Saddle Club, 26 i 1977 (MLM); 1 ♀, Trinidad River, 30 iii 1912, leg. A. Busck (FSCA); 1 ♂, same but 01 v 1911 (FSCA). Colombia, Antioquia

Department: 1 ♂, 1 ♀, Porcecito, on Río Porce, E of Medellín, 20 vii 1938, leg. N.A. Weber (FSCA); Bolivar Department: 2 ♂, Bolivar, 23 xii 1916, leg. J.H., E.B. Williamson (RWG); 1 ♂, same but 26 xii 1916 (RWG); Córdoba Department: 2 ♀, Montería, 01 ix 1980, leg. SWD (SWD). Venezuela, Aragua State: 1 ♂, near Puerto Cabello, stream with marsh, 22 viii 1974, leg. G. von Rosen (RWG); Falcon State: 2 ♂, Tucacas, 25 iii 1920, leg. H.B. Baker (RWG); Tachira State: 2 ♂, La Fria, 14 iv 1920, leg. J.H., E.B. Williamson, W.H. Ditzler (RWG). Ecuador, Sucumbíos Province: 1 ♂, Limoncocha, lake shore around lake by canoe, 24 viii 1978, leg. K.W. Knopf (RWG); 1 ♂, same but swamp canal, 25 viii 1980, leg. SWD (RWG); Orellana Province: 3 ♂, 1 ♀, La Selva, 100 km E Coca, Manicocha, shady forest rivulet, 12 x 1988, leg. SWD (RWG); Napo Province: 2 ♂, sandy stream and marshes, 1.7 km W junction Coca Road on Loreto Road, collected under Permit No. 027 1C INEFAN/DNANVS, 13 vi 1995, leg. SWD (RWG); 2 ♂, sloughs along Napo River, 3.2 km E Tena road on Jatun Sacha road, Permit No. 029-1C INEFAN/DANVS/VS., 23 vii 1996, leg. SWD (RWG); 1 ♂, Río Sinde pond, 5.3 km E Puerto Napo on Jatun Sacha road, 13 vii 1996, leg. KJT (FSCA); 3 ♂, W branch of Ishpinga-Jacu, 19 ix 1942, leg. W. Clarke-McIntyre (RWG). Peru, Madre De Dios Department: 7 ♂, Hotel Amazonia, across from Atalaya, exposed pond, 27 vi 1993 (RWG; USNM). Brazil, Acre State: 1 ♂, Tarauaca, xii 1966, leg. Werner (RWG); São Paulo State: 4 ♂, 1 ♀, Rio Claro, Sitio Primavera, 27-28 xii 1997 (RWG); 1 ♂, 1 ♀, same but 02 i 1998 (RWG). Bolivia, Cochabamba Department: 1 ♂, Chapare Province, stream N of Shinahota (about 25 km E of Villa Tunari), 22 xi 1999, leg. KJT (FSCA); Santa Cruz Department: 1 ♂, Ichilo Province, Buena Vista, 17.5 km E on highway 7, vegetated borrow pit, 08 xi 1998, leg. W.A. Mauffray (IORI); 1 ♂, Ñuflo de Chavez Province, San Ramón, 4.2 km E on road to San Luis Herman, 15 xi 1998, leg. W.A. Mauffray (IORI); 2 ♂, 1 ♀, Velasco Province, Laguna Guapoma San Ignacio, 10 xi 1999 (FSCA). Argentina, Jujuy Province: 1 ♂, Parque Nacional Calilegua, laguna, 21-22 iii 2006, leg. RWG, NVE (RWG).

## Diagnosis

Both sexes are diagnosed from its two closest allies, *T. digiticollis* and *T. levis*, under *T. digiticollis*.

## Remarks

The original description was based on a male from Darien (Panama) collected in 1895 by Enrico Festa (Papavero 1973: 353). Calvert (1902: 117) applied the name to a series of nine males and five females from Teapa and Río Grijalva, Tabasco State, Mexico based on Martin's (1895) description. Calvert (1907: 384), in describing the male of *T. digiticollis* stated that it "...is very similar to that identified in this work as *T. griffinii*; it differs as follows: prothorax in great part dark metallic-green (chiefly yellowish in *griffinii*), dark metallic-green mesepimeral stripe always present (often absent, shorter when present in *griffinii*), inferior appendages absolutely – and also relatively with respect to the superiors – longer, superior appendages more strongly curved downward... These differences make it probable that I have correctly identified *T. griffinii*." Calvert had not seen any specimens of either species south of Honduras. The only known record from Panama of *T. griffinii* sensu



Calvert was the type, well within the known distribution of the closely-related (by thoracic color pattern) *T. limoncocha*, which made me suspect that the true *T. griffinii* really represented *T. limoncocha*. In order to confirm Calvert's concept of *T. griffinii* I asked the curators at MIZT to compare the holotype of *E. griffinii* with my diagnostic illustrations of *T. griffinii* sensu Calvert and *T. limoncocha*. Their examination and photographs (Fig. 27) confirmed my suspicions, and I consider *T. limoncocha* to be a junior synonym of *T. griffinii*, and *T. griffinii* sensu Calvert is here described as new (*T. levis*).

Bick & Bick (1995: 17) diagnosed male of *T. griffinii* sensu Calvert (*T. levis*) from both *T. digiticollis* and *T. limoncocha* (= *T. griffinii*) by cercal curvature in lateral view – only slightly angulate in *T. levis*; strongly bent ventrad in the other two- and proportional length of cercus to paraprocts – subequal in *T. levis*, shorter and paraproc extending 0.1 beyond cercus in the other two species. However, cercal curvature can vary in *T. levis* from straight (Fig. 21r) to angled (Fig. 21s) and length from subequal to 0.75 length of paraproc. The only reliable character I have found is the width of cercus at distal 0.50 and angulation of its tip in medio-dorsal view; in *T. levis* male cercus is narrow and parallel-sided and its tip is acutely angulate (Figs 18c, d). Bick & Bick (1995: 32) described *T. griffinii* (as *T. limoncocha*) as occurring from Panama south into South America and recognized its similarity to *T. griffinii* sensu Calvert: “The overall pale thorax, like that of *griffinii* [*T. levis*], readily separates these two [*T. griffinii* and *T. levis*] from the much darker *digiticollis*. But there may be difficulty in separating the two pale [*T. griffinii* and *T. levis*] species. The cercus of *limoncocha* [*T. griffinii*] is slightly shorter, more bent ventrad, apically less clearly truncate than that of *griffinii* [*T. levis*]. Many specimens of *limoncocha* [*T. griffinii*] from Ecuador and Peru can be recognized by the black mark across the first lateral suture. *T. limoncocha* [*T. griffinii*] females have obvious prothoracic horns which are absent in *griffinii* [*T. levis*]...” As mentioned above, extent of dark coloration cannot be used to reliably diagnose among these three similar species.

## Distribution

Panama south to N Argentina in South America (Fig. 32). Species is curiously absent from the interior Amazon basin though this may be due to inadequate collecting. This is the only member of the *T. digiticollis* group occurring in South America.

## Biology

A common pond species whose habits likely mirror those of other members in the genus.

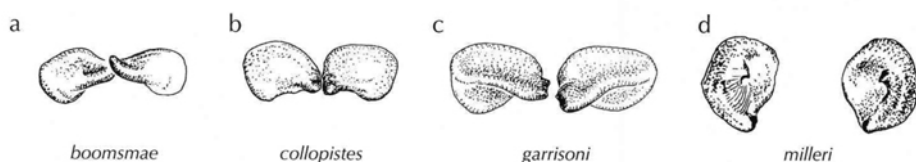


Figure 24: Male caudal appendages, posterior view — (a) *Telebasis boomsmae*, Belize, Gallon Jug; (b) *T. collopistes*, Mexico, Tabasco; (c) *T. garrisoni*, Colombia, El Banco; (d) *T. milleri*, Peru, Pakitza.

*Telebasis inalata* (Calvert, 1961)

Figs 6q (♀ pthx); 13p (lig); 17p; 21n (app); 26d (♀ S8-10); 34 (map); Plate 1c (♂)

*Aeolagrion inalatum* Calvert, 1961: 8 (holotype ♀ from Amazon River, Iquitos, Peru, 16 x 1955, lost).

*Telebasis inalata* (Calvert). — Dunkle (1991: 243; transfers sp. to *Telebasis*); — Bick & Bick (1995: 30; designation of neotype ♀ in IORI, redescription of ♀, description of ♂).

## Specimens examined

Ecuador, Guayas Province; 12 ♂, Horned Screamer Reserve [= Manglares Churute Ecological Reserve?, 40 km SE Guayaquil], 8 km E of Cerro Mas Vale, 10 ii 2001, leg. FGS (RWG); 1 ♂, flooded fields just W of Fundación Andrate (2°23'S, 79°38'W), 14 xi 2001, leg. FGS (TWD); Los Rios Province: 1 ♂, 20 km N Babahoyo, 22 vi 1975, leg. J. Cohen, A. Langley, P. Monnig (RWG); Manabi Province: 4 ♀, 39 km E Bahía de Caraquez, 09 v 1975, leg. A.B. Gurney et al. (RWG); 15 ♂, 4 km W of Calceta, lake margin, 20 x 1978, leg. J.G. Anderson (RWG); Sucumbíos Province: 3 ♀, Limoncocha, Limón, Río Gaveno, 30 viii 1978, leg. K.W. Knopf (RWG); 1 ♂, 1 ♀, Limoncocha on Río Napo., 06 xi 1980, leg. M.J. Westfall Jr., David Robinson (RWG). Peru, Loreto Department: 2 ♂, Explornapo Camp on Sucusari River nr Napo River about 160 km NE Iquitos, at Lorenzo, a blackwater lake, 14 vii 1990, leg. SWD (RWG); 1 ♂, 1 ♀, Explorama Lodge, 80 km NE Iquitos on Amazon River, 05 vii 1990, leg. SWD (RWG); Huanuco Department: 1 ♀, Chapajilla, leg. F. Woytkowski (RWG). Bolivia, Santa Cruz Department: 1 ♂, Los Lajas hacienda and lagunas, Guarayos, 27 viii 2003, leg. JJD (JJD). Paraguay, Amambay Department: 1 ♂, near Cerro Memby, on road between Cerro Cora, Yby Yau, Pistia pond, 30 xi 1973, leg. O.S. Flint Jr. (RWG). Argentina, Salta Province: 7 ♂, 3 ♀, San Martin Department, Lagunita de las Catas, km 23 on road from Piquirenda Viejo to Yacimiento Macueta, 27 iii 2007, leg. NVE (NVE; RWG); Jujuy Province: 1 ♂, Parque Nacional Calilegua, laguna (23°47'S, 64°47'W), 21-22 iii 2006, leg. NVE, RWG (NVE).

## Diagnosis

This species is closely related to *T. filiola* and *T. willinki* by size, coloration, genital ligula, and morphology of appendages. Of these three, male of *T. inalata* alone lacks the black sclerotized ridges along postero-dorsal margins of S10 (Fig. 17p) which are present in the other two species (Figs 17j; 19h). Male cerci of *T. inalata* and *T. filiola* are almost identical but their female mesostigmal plates are different: a large, erect lobe is present on the medio-posterior margin of the plate of *T. filiola* (Fig. 6j) but is lacking in *T. inalata* (Fig. 6q). The more rounded tip of cercus of male of *T. willinki* (Fig. 19h) will easily separate it from the more broadly quadrate cercus in *T. inalata* (Fig. 17p). Females of these two species are separated under couplet 2 of Key F-2.

## Remarks

Bick & Bick (1995: 32) examined 17 ♂ and 1 ♀ from Manabi Province in Ecuador, W of the Andes, which they called “a dark form” of *T. inalata*. They noted that male abdomen was black instead of red as in males from E of the Andes, and stated that

this condition was variable and that morphological characters were essentially the same. I have examined these specimens and other dark specimens from Guayas and Los Rios Provinces, also W of the Andes, and agree that they represent true *T. inalata*. Juvenile males are inseparable from males from E of the Andes, but the abdomen be-

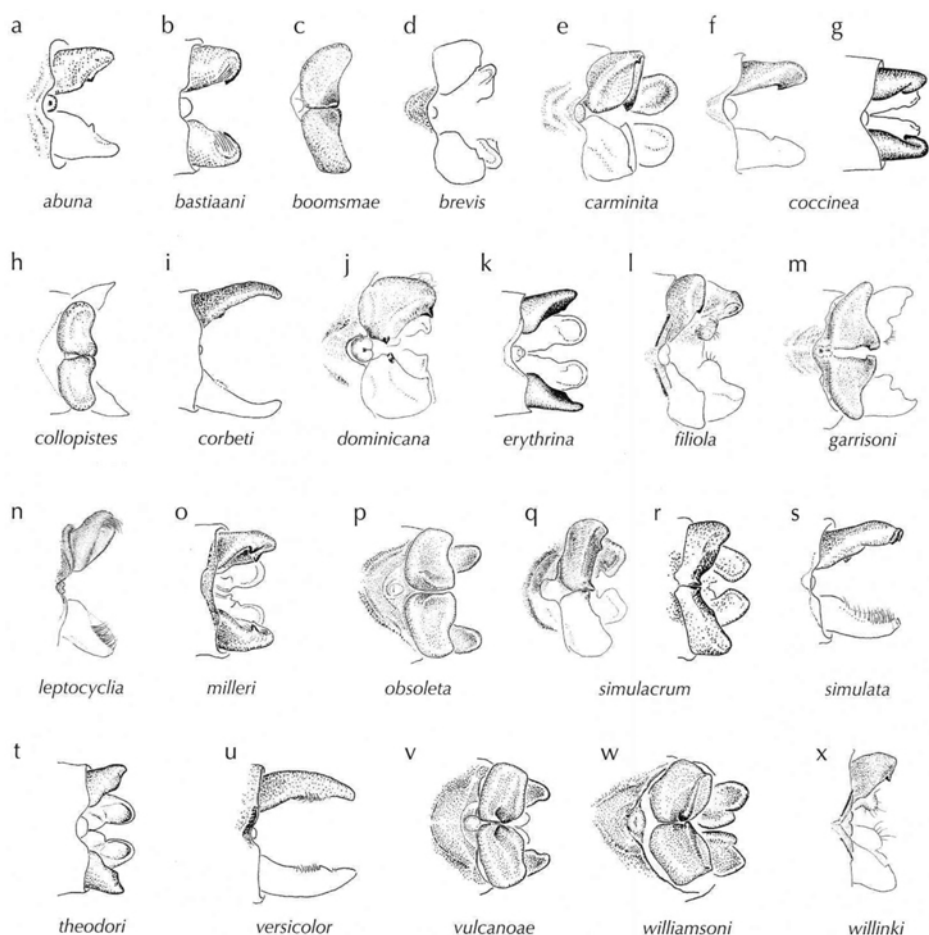


Figure 25: Male caudal appendages, dorsal view — (a) *Telebasis abuna*, holotype, Brazil, Abuna; (b) *T. bastiaani*, paratype, Venezuela, W of Mantecal; (c) *T. boomsmae*, paratype, Belize, Gallon Jug; (d) *T. brevis*, Ecuador, Cojimies; (e) *T. carminita*, Bolivia, Reyes; (f) *T. coccinea*, syntype of *T. coccinata*, Brazil, Minas Gerais (MCZ); (g) *T. coccinea*, lectotype, Brazil, Minas Gerais (IRSN); (h) *T. collopistes*, Mexico, Tabasco; (i) *T. corbeti*, paratype, Peru, Madre de Dios; (j) *T. dominicana*, Puerto Rico, Tortuguero; (k) *T. erythrina*, Brazil, Minas Gerais (IRSN); (l) *T. filiola*, Venezuela, Tucacas; (m) *T. garrisoni*, Colombia, El Banco; (n) *T. leptocyclus*, Brazil, Abuna; (o) *T. milleri*, Peru, Pakitza; (p) *T. obsoleta*, lectotype, BNHM; (q) *T. simulacrum*, lectotype, Brazil, Cuiaba; (r) *T. simulacrum*, paratype of *T. lacustris*, Bolivia, Espiritu Río Yacuma; (s) *T. simulata*, Brazil, Manaus; (t) *T. theodori*, paratype of *T. aureipennis*, Argentina, Parque Nacional Iguazú; (u) *T. versicolor*, Ecuador, Reserva Waorani; (v) *T. vulcanoae*, paratype, Brazil, Lago do Bispo; (w) *T. williamsi*, holotype, Colombia, El Banco; (x) *T. willinki*, Argentina, Buenos Aires. Figs 25g, k by NVE.

comes black as they mature. A feature not mentioned by Bick & Bick is that all males acquire a heavy dusting of white pruinosity when fully mature (Pl. Ic), a condition not seen in any other member of the genus. Like Bick & Bick (1995), I have found no morphological differences in the secondary sexual structures of males and females from populations E and W of the Andes.

### Distribution

Widespread along W South America from Sucumbíos and Manabí Provinces in Ecuador south to Jujuy Province in NE Argentina (Fig. 34). This species has been collected with *T. willinki* in Santa Cruz Department, Bolivia (simultaneously), and Jujuy and Salta Provinces, Argentina (at different times). They are likely sympatric along S Paraguay.

### Biology

This is apparently a common pond species in certain areas, and its habits mirror those of *T. filiola*. Commonly associated with *Pistia* in Ecuador (DRP pers. comm.).

## *Telebasis incolumis* Williamson & Williamson, 1930

Figs 7a (♀ pthx); 14a (lig); 17q; 21o; 23b (app); 29 (map)

*Telebasis incolumis* Williamson & Williamson, 1930: 20 (holotype ♂, allotype ♀, Baja California Sur, San José de Comandú, 10 x 1923, leg. J.H. Williamson, in UMMZ).

### Specimens examined

Holotype ♂, allotype ♀ (UMMZ). Other specimens: Mexico, Baja California Norte State: 1 ♂, Río Santo Tomás, W of Santo Tomás, 25 vii 2006, leg. T. Manolis, M.J. Iliff, R.A. Erickson; Baja California Sur State: 2 ♂, Primer Agua, 7 km W of highway 1 and 6 km S of Loreto at km 114, 2 xi 1984, RWG, J.A. Garrison; 9 ♂, 1 ♀, Las Parras, about 18 km from highway 1 on road to San Javier, SWD of Loreto, 01 ix 1985, leg. RWG (all RWG).

### Diagnosis

This species is similar to *T. byersi* (allopatric) and *T. salva* (sympatric) by having the posterior portion of mesepisternal black stripe with a distinct lateral projection at dorsal 0.25 (as in Fig. 4l). Adults are diagnosed by Westfall (1957), Bick & Bick (1995, 1996), and Westfall & May (2006) and are further separated in keys to males and females above. *T. salva* is usually smaller compared to *T. incolumis*. Female prothoracic horns (Fig. 7a) are minute and do not reach middle lobe of prothorax; horns are absent in *T. byersi* (Fig. 5k) and extend over prothoracic middle lobe in *T. salva* (Fig. 7l).

### Distribution

Baja California in Mexico (Fig. 29). The recent finding of *Enallagma eiseni* Calvert, 1895, another species thought endemic from Baja California, from Arizona, USA

(Kappes & Kappes 2006), and the recent collection of *T. incolumis* from N Baja California, ca 112 km S of border with California State, USA (Manolis et al. 2006), make me suspect that *T. incolumis* will eventually be found in SWD USA.

## Biology

Garrison (1986a) and Manolis et al. (2006) describe this species as frequenting desert pools.

## *Telebasis isthmica* Calvert, 1902

Figs 7b (♀ pthx); 14b (lig); 18a; 21p (app); 31 (map)

*Telebasis isthmica* Calvert, 1902: 118 (3 ♂ syntypes: 2 ♂ from “Panama”, 1 ♂ from “Obispo”, in MCZ); — Calvert (1908: xxviii; specimen illustrated from type series to be regarded as holotype).

## Specimens examined

2 ♂ paratypes (see under Remarks; MCZ). Other specimens: Costa Rica, Guanacaste Province: 1 ♂, Hacienda Taboga, west marsh, 27-29 vi 1967, leg. O.S. Flint, M.E. Ortiz; 1 ♂, 1 ♀, same but 04 vii 1967, leg. DRP; Puntarenas Province: 1 ♂, 1 ♀, Parque Manuel Antonia (detrás de Playa Espadilla), 14-26 vi 1989, leg. J. Belle. Venezuela, Falcon State: 1 ♂, 1 ♀, Tucacas, 23 iii 1920; 1 ♂, 1 ♀, same but 24 iii 1920 (all RWG).

## Diagnosis

This long, slender, pale species is similar only to the allopatric *T. brevis*, and both are diagnosed under the species account of the latter.

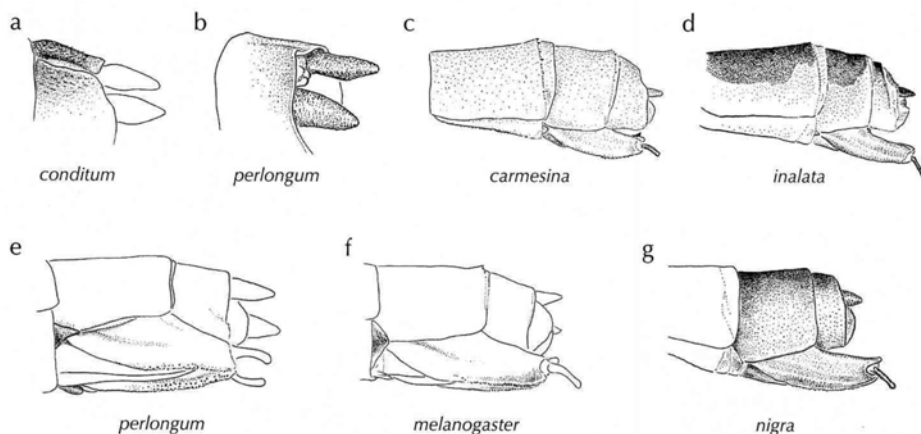


Figure 26: Female abdominal tip — (a, b) S10, medio-dorsal view; (c-g) S8-10, medio-ventral view — (a) *Chromagrion conditum*, USA, NJ, Marion County (RWG); (b) *Leptagrion perlongum*, Brazil, Castelo (RWG); (c) *Telebasis carmesina*, paratype, Belize, Gallon Jug; (d) *T. inalata*, Ecuador, Cojimies; (e) *Leptagrion perlongum*, Brazil, Castelo; (f) *Diceratobasis melanogaster*, Dominican Republic, Constanza; (g) *Tepuibasis nigra*, paratype, Venezuela, Cerro Yutaje.

## Remarks

Calvert (1902: 118) described three males in MCZ; two from ‘Panama’, the third from ‘Obispo’ (Panama). However I found only two males in the MCZ labeled as follows: “Panama”, “TELEBASIS [printed] TYPE [written]/ isthmica Calv. [written]/ P.P. Calvert, det. [printed] 1902 [written]/ B.C.A. Neur., p. [printed] 119 [written]”; and second ♂ similarly labeled, but: “Obispo. Hassl Exp. [written]/ Panama [printed]”, and Calvert’s determination label (without type label), MCZ 12289. Calvert (1908: xxviii) remarked that specimens which were principally figured were to be regarded as holotypes. Although the first specimen enumerated above is marked “TYPE” by Calvert, it was not the one figured. I believe that the third specimen, which was the one illustrated, is to be considered the holotype, and the two examined males, paratypes.

## Distribution

W coast of Mexico from Nayarit State south through Costa Rica, Panama, and east into Falcon State, Venezuela (Fig. 31).

## Biology

Common at grassy marshes in Mexico and Costa Rica (DRP pers. comm.).

## *Telebasis leptocyclus* sp. nov.

Figs 9e (♂ pthx); 14c (lig); 18b; 21q; 25n (app); 37 (map)

## Etymology

Feminine form of an adjective derived from Gr. *leptos* (thin), and *kyklos* (circle), referring to the thin, round cercus when seen in medio-dorsal view (Fig. 18b).

## Specimens examined

Brazil, Rondônia State: ♂ holotype, Abuna (9°42’S, 65°23’W, 112 m), 09 iii 1922, leg. J.H. Williamson, J.W. Strohm (UMMZ); 1 ♂ paratype, same data as holotype (RWG).

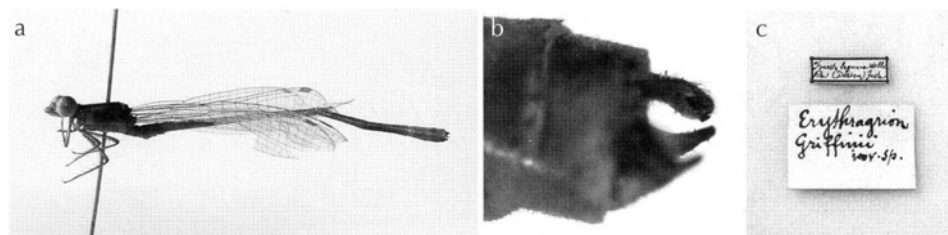


Figure 27: Holotype of *Erithragrion griffinii* deposited at MIZT — (a) lateral view, (b) medio-dorsal view of caudal appendages, (c) type labels. Photos by Luca Piciau.

## Male holotype

**Head:** Labium ivory white, labrum, clypeus, entire face to antefrons including anterior part of antennifer blue; epicranium metallic black with dull blue diagonal arm extending from ocellar triangle to base of antenna; occipital bar blue, joining at either end with a small blue spot occupying medial 0.50 of occiput; antennifer, scape, pedicel (flagella missing) dark brown; rear of head pale with finger from epicranial black extending to rear toward foramen.

**Thorax:** Prothorax blue, becoming pale blue laterally, darkened with brown along medial margin of middle lobe; prothoracic posterior lobe with a well-defined rounded medial portion with rim slightly curved anteriorly and with basal 0.70 tumid (Fig. 9e); thoracic carina black, medial 0.50 of mesepisternum metallic black, remainder of mesepisternum pale blue, a narrow brown stripe on humeral suture, mesepimeron and mesenfraepisternum blue with small isolated brown spot at dorsal 0.33 of obsolete interpleural suture, metapleural fossa washed with brown, remainder of synthorax including venter of thorax and base of coxae pale blue. Legs pale blue becoming ivory white distally with brown on posterior margins and tips of femora and washing laterally over onto sides, armature black; tibial spurs longer than intervals between them; tarsi pale, dark at extremities. Wings hyaline, 11 Px in Fw, 9 Px in Hw (right; left tip missing);  $RP_2$  originating at Px 5 in Fw, at Px 4 in Hw; pterostigma brown, rhomboidal, surmounting one cell.

**Abdomen:** S1 pale blue dorsally with basal brown spot; S2 entirely blue dorsally with isolated semicircular dorsal spot on apical 0.70, paler ventrally and brown at annuli; S3 blue with irregular black spot dorsally on distal 0.25 connecting with black annulus; S4-7 blue laterally and black dorsally with narrow blue ring at anterior 0.10; S8-9 blue; S10 black. Genital ligula (Fig. 14c) small, long, and narrow, with inner fold small, extending to 0.10 of apical segment and without raised sclerotized semicircular swelling at sides of flexure; apical segment in lateral view with recessed apical ventral lobe (Fig. 14c) which, in dorsal view is mostly hidden. Cerci black, paler ventrally; paraprocts black. Cercus in lateral view (Fig. 21q) slightly shorter than S10 and subequal to paraproct, round, narrowing at base and shallowly emarginate distally, with two small teeth: a smaller mid-ventral and a larger distal tooth on ventral margin; cercus similar in medio-dorsal view (Fig. 18b) to that in lateral view but with medial margin gently concave and with dorsal margin terminating in a small broadly based tubercle (covered with thick patch of pale hairs), with two prominent black ventral teeth, the mid-ventral one smaller and recessed from larger more distal tooth. Paraproct quadrate in lateral view with a postero-dorsally directed digit-like branch; in medio-dorsal view its dorsal surface accommodates ventro-basal teeth of cercus.

**Dimensions:** Hw 15, abd 24.

## Variation in paratype

Agrees in all aspects with holotype but legs paler. Px in Fw 10; in Hw 8; origin of  $RP_2$  in Fw at Px 5, in Hw at Px 4; Hw 17; abd 26. Female unknown.

## Diagnosis

Morphology of male appendages (Figs 18b; 21q; 25n) and diminutive genital ligula (Fig. 14c) are unique within the genus.

## Remarks

This is an aberrant member of the genus but its overall body pattern and angulate frons suggest that the species is correctly placed here.

## Distribution

Known only from the type locality, Abuna, in NW Brazil (Fig. 37).

## *Telebasis levis* sp. nov.

Figs 7c (♀ pthx); 14d (lig); 18c, d; 21r, s (app); 32 (map); Plate IIa (♂)

*Telebasis griffinii* nec Martin. — Calvert (1902: 116, 117; key and characterization); — Calvert (1907: 383, 384; additional locality, comparison with *T. digiticollis*); — Bick & Bick (1995: 30, key to males); — Bick & Bick (1996: 11, key to females).

## Etymology

From Latin *levis* (smooth, polished, bald), referring to the smooth female pronotum which lacks the typical prothoracic horns (Fig. 7c) present in all sympatric species of the genus.

## Specimens examined

Guatemala, El Petén Department: holotype ♂, Uaxactun, 03 v 1931, leg. A. Murie (UMMZ); paratypes, 14 ♂, 3 ♀: Mexico, Sonora State, 1 ♂, 1 ♀, Navjoa Municipality, immediately downstream from highway 15, bridge over Río Mayo, 23 vi 2004, leg. S. Upson; 1 ♂, same but large pond near Río Mayo, 26 ix 2004; Michoacan State, Coahuayana Municipality: 4 ♂, El Ticuiz, arroyo bajo el Puente (18°40'24"N, 103°40'36"W, 10 m), 09 xi 2005, leg. R. Novelo & J.A. Gómez (INECOL); 3 ♂, same but (RWG); 2 ♂, same but 20 i 2006 (INECOL); 1 ♂, same but (RWG); 2 ♂, same but 20 iv 2006 (INECOL); 1 ♂, same but (RWG); 1 ♂, 1 ♀, same but 12 vii 2006 (INECOL). Belize, Orange Walk District: 3 ♂, 1 ♀, Gallon Jug, 06 v 1993, leg. T. Boomsma. Guatemala, El Petén Department: 2 ♂, Uaxactun, 03 v 1931, leg. A. Murie; 4 ♂, same but 13 v 1931. Costa Rica, Guanacaste Province: 1 ♂, Hacienda Taboga, marsh, 15 vii 1966, leg. DRP, M.L. Paulson (all RWG); San José Province: 1 ♂, 1 ♀, Parque Reptilandian E of Dominical on San Isidro Road (09°16'48"N, 83°49'37"W), 16 iv 2008, leg. FGS (FGS); 1 ♂, same but (RWG).

## Male holotype

**Head:** Labium pale ochre, labrum pale orange; clypeus and frons dull orange, paler along genae; epicranium metallic black with following dull orange: anterior portion of postfrons, ocellar triangle with diagonal arm extending to base of antenna, spot anterior to median ocellus, antennifer, scape, and pedicel, flagellum; dorsal 0.50 of rear of head black (as in Fig. 1f), ventral 0.50 pale ochre.

**Thorax:** Prothorax dull orange, darkened with brown medially at base of frontal lobe and prothoracic posterior lobe except for rim; thoracic carina black, confluent with black medial 0.50 of mesepisternum (as in Fig. 4k), remainder of mesepister-



num and anterior 0.50 of mesepimeron orange, mesopleural fossa dark brown; remainder of synthorax including venter of thorax and base of coxae pale ochre. Legs ocher with wash of brown on posterior margins of femora, tarsi pale, dark at extremities, armature black. Wings hyaline, Px: Fw 10; Hw 8 (left)/ 9 (right) [tip of right Hw missing];  $RP_2$  originating at Px 5 in Fw, at Px 4 in Hw; pterostigma orange brown, rhomboidal, surmounting just over one cell.

**Abdomen:** S1-10 red dorsally, paler ventrally. Cerci red becoming darker along distal 0.33, paraprocts dull orange, paler ventrally, tips black. Genital ligula (as in Fig. 14d) long, with apical 0.50 foliate, undifferentiated in lateral view; inner fold well developed, extending ca 0.50 of apical segment length; chitinated tubercle at genital ligula flexure present. Cercus (Figs 18c; 21r) subequal to paraproct, straight, linear, gradually narrowing apically in lateral view (Fig. 21r); cercus in medio-dorsal view narrow, distal half as wide as basal half, its apex angulate (at, Fig. 18c) and with an elongate ventro-apical tooth extending to basal 0.30 of cercus; remainder of medial surface slightly concave and with a sparse series of closely appressed anteriorly directed golden hairs along ventral margin (removed in holotype for illustration). Paraproct acute with tips directed postero-medially.

**Dimensions:** Hw 14, abd 22.

#### Female paratypes

Head and thorax similar to male but pale color entirely ochraceous brown, metallic markings on epicranium less extensive than in holotype; middle lobe of prothorax rounded, lacking horns, minute protuberances observed only in female from Michoacan; posterior lobe semicircular, entire (Fig. 7c); female from Sonora, Mexico with a slightly differentiated medial portion and separated lateral portions (similar to Fig. 6o); mesostigmal plate, small, triangular, undifferentiated posterior border demarcated from shallow transverse oval depression on anterior margin of mesepisternum. Remainder of synthorax as in male, but with yellow ochre replacing orange. Wings as in male, Px: Fw 10-11, Hw 9-10;  $RP_2$  originating at Px 5-6 in Fw, at Px 4- in Hw. Abdomen brown above except for incomplete pale ring at base of each segment, ochre laterally with lateral pale areas of S7-10 becoming orange; cerci brown. Dimensions ( $n = 3$ ): Hw 16-19, abd 25-28.

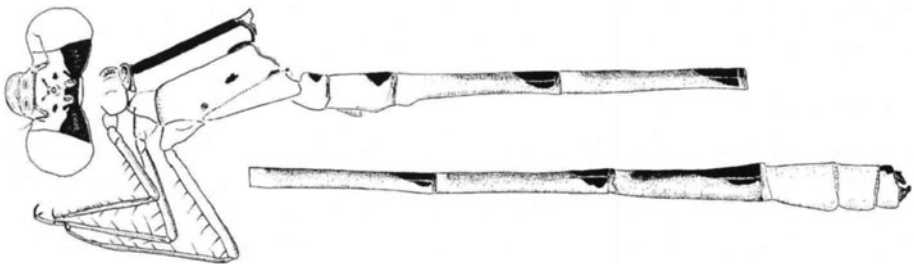


Figure 28: *Telebasis simulacrum*, lectotype, Brazil, Cuiaba.

### Variation in male paratypes:

Males variable as to amount of black on pro- and synthorax. Male from Sonora has entire dorsum of prothorax and mesepisternum, and anterior half of mesepimeron black (Pl. IIa; similar to Fig. 4h). All others have black markings on mesepisternum reduced to medial 0.50 to 0.80. Male cercus variable in length compared to paraproct and in angulation as shown in Figs 18c, d; 21r, s. Dimensions ( $n = 10$ ): Px: Fw 9-10, Hw 7-8; origin of  $RP_2$  in Fw 5, Hw 4; Hw 14-16; abd 22-24.

### Diagnosis

Both sexes are diagnosed from its two closest allies, *T. digiticollis* and *T. griffinii*, under *T. digiticollis*.

### Remarks

Calvert (1907: 384), in describing the male of *T. digiticollis* noted that his specimens were "...very similar to that identified in this work as *T. griffinii*..." and that the differences he documented made it "... probable that I have correctly identified *T. griffinii*." Examination of photographs of the holotype of *Erithragrion griffinii* (Fig. 27) show that Calvert's (1907) application of *E. griffinii* was incorrect and that it represents the species described here.

### Distribution

Sonora and Veracruz States in Mexico south through Costa Rica (Fig. 32).

### Biology

Found at marshes (label data). Almost invariably associated with beds of floating plants such as *Pistia* and *Eichhornia* in Mexico and Costa Rica (DRP pers. comm.).

## *Telebasis livida* Kennedy, 1936

Figs 7d (♀ pthx); 14e (lig); 18e; 21t (app); 38 (map)

*Telebasis livida* Kennedy, 1936: 811 (holotype ♂, Ecuador, Napo-Pastaza Province [Oriente in original description], between Río Ila and Río Anzu, 800 m, xi 1934, leg. W. Clarke-McIntyre, in UMMZ).

### Specimens examined

Holotype ♂ (UMMZ). Other specimens: Ecuador, Napo Province: 1 ♂, Jatun Sacha Biological Station, 23 km E of Puerto Napo, ponds nearby tropical wet forest, 18 xi 1988, leg SW; 1 ♂, pond along Río Sinde, 6 km E of Puerto Napo, 12 xi 1997, leg. KJT. Peru, Madre De Dios Department: 2 ♂, 1 ♀, Hotel Amazonia, across from Atalaya, exposed pond (12°52'13"S, 71°22'34"W, 414 m), 27 vi 1993, leg. RWG (all RWG).

### Diagnosis

Male distinctive by unusual blue and red (S8-10) coloration, a condition shared only with *T. rubricauda*, but appendages (Figs 18e; 21t) and genital ligula (Fig. 14e) are different from those of *T. rubricauda* (Figs 14j; 18j; 22d). Female (Key F-7) charac-

terized by stout, slightly divergent prothoracic horns, well-developed depression on middle prothoracic lobe, and oval depression posterior to medial 0.50 of mesostigmal plate (Fig. 7d), rear of head with dorsal portion black, and black thoracic carina.

#### Remarks

Female (previously unknown) has broad medial black stripe on thorax with orange on both sides extending beyond humeral suture and fading to light blue on sides of thorax; an ill defined orange stripe over metapleural suture; S1-7 blue below, and S8-10 dull orange.

#### Distribution

Ecuador and Peru (Fig. 38).

#### Biology

I collected a male and a pair in tandem at a pond in Peru.

### *Telebasis milleri* Garrison, 1997

Figs 7e (♀ pthx); 14f (lig); 18f; 21u; 24d; 25o (app); 42 (map)

*Telebasis milleri* Garrison, 1997: 468 (holotype ♂, Peru, Madre de Dios Department, Pakitza Reserved Zone, palm swamp at stake 28, near Troncal Castañal [ca 11°56'S, 71°18'W], 06 vii 1993, leg. RWG; allotype ♀, same data as holotype but Troncal Stake 19, 08 ix 1989, leg. J.A. Louton, both in trust in USNM pending repatriation per agreement with the Ministerio de Agricultura, Instituto Nacional de Recursos Naturales, Peru).

#### Specimens examined

Holotype ♂, allotype ♀ (USNM). Other specimens: Peru, Madre de Dios Department: 1 ♂, 1 ♀, Pakitza Reserved Zone, trail 2, 22 ix 1988, leg. O.S. Flint Jr.; 1 ♂, same but T2 to R2 to T1, 18 ix 1989, leg. J.A. Louton; 1 ♂, same as holotype (all RWG).

#### Diagnosis

Male distinctive by elongate seam of cercus diamond shaped when viewed laterally (Fig. 21u). Genital ligula is similar to that of *T. carota* (Fig. 12m), *T. corbeti* (Fig. 13c), *T. versicolor* (Fig. 15a), and *T. watsoni* (Fig. 15d); these species have differently shaped male cerci, and they are keyed by genital ligula morphology in Key Ma-2. Female is closest to *T. coccinea* but is larger: Hw > 18, abd > 27; vs Hw < 16, abd < 19 in *T. coccinea*. Mesepisternum has a longitudinally directed tubercle just posterior to mesostigmal plate (Fig. 7e; lacking in *T. coccinea*, Figs 5q, r); and morphology of posterior lobe prothorax is as given in Key-F-7.

#### Distribution

Madre de Dios Department, Peru (Fig. 42).

## Biology

Type specimens were collected at a shallow palm swamp with many partly submerged dead tree trunks and snags along the margin, where they were taken just above the water's surface as they flew in and out among the dead branches. Other specimens were taken along trails within primary rainforest.

*Telebasis obsoleta* (Selys, 1876) comb. nov.

Figs 7f-h (♀ pthx); 14g (lig); 18g; 22a; 25p (app); 35 (map)

*Leptagrion? obsoletum* Selys, 1876: 985 [275 reprint] ("Obydos sur l'Amazone, un couple, Coll [Mac Lachlan.]", in BNHM); — Kimmins (1970: 189; catalog BNHM); — Costa & Garrison (2001: 389; translation of original description, discussion).

*Acanthagrion chirihuanum* Calvert, 1909: 173 (syntype ♂ Cuyabá, leg. H.H. Smith, in CM).

*Helveciagrion chirihuanum* (Calvert). — Machado (1980: 66; transfer to *Helveciagrion* gen. nov.).

*Helveciagrion obsoletum* (Selys). — Lencioni (2006: 123; synonymy of *H. chirihuanum* based on RWG pers. comm.).

## Specimens examined

Lectotype ♂ (BNHM). Other specimens: Ecuador, Sucumbíos Province: 1 ♂, Limoncocha, 03-16 vi 1977, leg. P.J. Spangler, D.R. Givens (RWG); 1 ♂, same but 29 viii 1978, leg. K.W. Knopf (RWG); 2 ♂, same but Sucumbíos, Sushufindi, 15.7 km S of Limoncocha road, marshy stream and pond, 19 vii 1996, leg. B. Mauffray (USNM). Peru, Loreto Department: 1 ♀, Iquitos, ix 1940, leg. G.G. Klug (RWG); 1 ♂, 1 ♀, same but Explorama Lodge, 80 km NE of Iquitos on Amazon River at junction with Yanamono River, 30 viii 1989 (RWG); 2 ♂, same but 19 viii 1992 (RWG); 6 ♂, 1 ♀, Yarinacocha, La Cabaña, forest pond, 09 vii 1977 (DRP); Madre de Dios Department: 1 ♂, Manu Biosphere Reserve, inside Manu Lodge, 29 viii 1990, leg. P. Donahue (DRP). Brazil, Acre State: 1 ♂, Tarauaca, xii 1956, leg. W.C.A. Bokerman (RWG); Amazonas State: 1 ♂, Parana Costa da Ilha de Curari (Rio Solimoes), canopy fogging project TRS #04, tray #266, white water inundation forest, varzea, 03 viii 1979, leg. J. Adis, T. Erwin, B.E. Montgomery et al. (USNM); 6 ♂, 1 ♀, same but Parana do Xi-boreninho, canopy fogging project TRS #05, collected by hand, mixed water, 05 viii 1979 (USNM); 5 ♂, 3 ♀, same but 07 viii 1979 (USNM). Bolivia, Beni Department: 1 ♂, Reyes, 27-30 xi 1956, leg. L. Peña (RWG); Santa Cruz Department: 2 ♂, 1 ♀, San Ramón, Río San Julian, 12 viii 2003, leg. FAL (RWG). Paraguay, Concepción Department: 1 ♂, Concepción, UV light trap, all one night, 25-26 x 1989 (USNM); 1 ♂, same but 29-30 xi 1989 (USNM). Argentina, Corrientes Province: 1 ♂, Municipalidad de Mercedes, Arroyo Pay Ubre, 21-23 ii 2003, leg. J. Muzón, P. Pessacq (RWG); 1 ♂, same but 27 ii 2003 (RWG); Formosa Province: 1 ♂, NE area of Formosa Province (ACR); 5 ♂, rute 11, km 1152.5, 22 km S of Formosa, roadside pool, 04-05 xii 1973, leg. O.S. Flint Jr. (USNM); 8 ♂, same but km 1194, ca 20 km N of Formosa, roadside pool, 04 xii 1973 (USNM).

## Diagnosis

Overall blue body, approximate cerci, and prominent upturned medial tooth visible in lateral view uniquely characterize the male (Figs 18g; 22a; 25p); deep, oval mesepisternal fossae on either side of narrow concave sinus and angulate lateral prothoracic lobe (Figs 7f-h) will identify the female.

## Remarks

In the original description of *L.?* *obsoletum*, the appendages are described as in bad condition; however, I was able to clean them and illustrate them here (Figs 18g; 22a; 25p). Even though I have not seen the types of *A. chirihuanum*, Calvert's illustrations of the appendages leave no doubt that these two names represent the same species. The specific epithet is here corrected to the feminine *obsoleta* to agree in gender with *Telebasis* as required by Art. 34.2 of the Code (ICZN 1999).

## Distribution

Widespread species occurring from Amazonian region of Ecuador along the Amazon River in Brazil south through Peru, Bolivia, Paraguay, and NE Argentina (Fig. 35).

## Biology

Inhabits ponds, roadside pools, marshy areas, and lake shores; some individuals (Paraguay) were taken at light traps at night, and others were fogged from canopy areas within white water inundated forest regions in Amazonas State, Brazil (label data). Commonly associated with beds of floating vegetation in wooded wetlands in Ecuador and Peru (DRP pers. comm.).

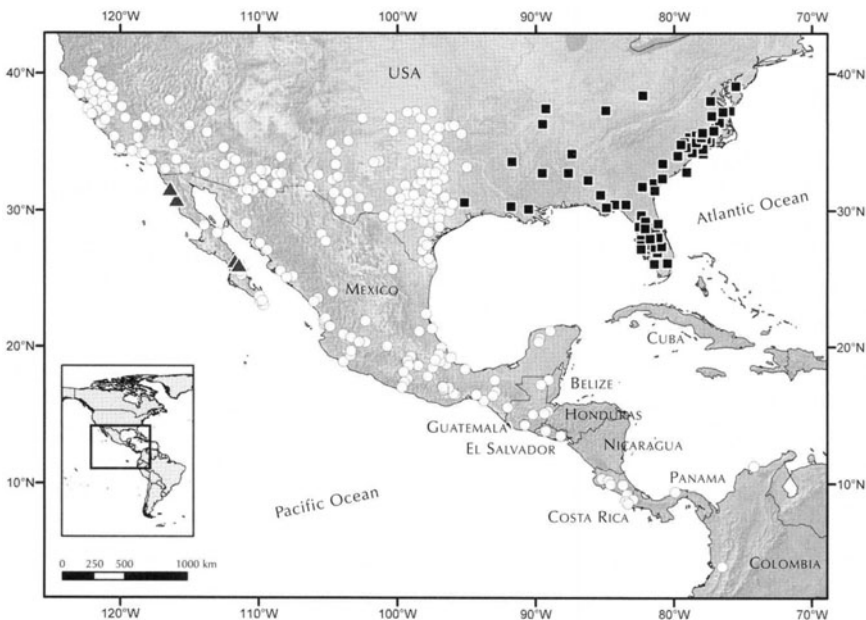


Figure 29: Distribution of *Telebasis byersi* (■), *T. incolumis* (▲), and *T. salva* (○).

*Telebasis paraensei* Machado, 1956

Figs 1e, 2d (♀ head); 7i (♀ pthx); 14h (lig); 18h; 22b (app); 41 (map)

*Telebasis paraensei* Machado, 1956: 227 (holotype ♂, allotype ♀, Brazil, Minas Gerais State, Açucena Municipality, Pedra Corrida [small railway station in deep forest in Rio Doce Valley], ii 1952, leg. ABMM, in ABMM).

## Specimens examined

Brazil, Minas Gerais State: 1 ♂ paratype, Açucena Municipality, Pedra Corrida (small railway station in deep forest in Rio Doce Valley), ii 1952, leg. ABMM (RWG); 1 ♀, Serra da Saudade (Coronel Fabriciano), iii 1957, leg. ABMM (RWG); 1 ♂, same but iv 1957 (FSCA).

## Diagnosis

Male distinctive by semicircular arched cercus (Fig. 18h) when viewed medio-dorsally. Genital ligula morphology (Fig. 14h) allies this species with *T. carmesina* (Fig. 12k) and *T. sanguinalis*, (Fig. 14l). More extensive orange on head (Fig. 2e) and narrow black mid-dorsal thorax stripe separates *T. sanguinalis* from the other two species, and the pale mesostigmal plate in *T. carmesina* separates it from *T. paraensei*. Female is similar to *T. corallina* and *T. carvalhoi* by possession of prothoracic horns, pale mid-dorsal carina, and development of a prominent glabrous swelling, but it can be separated by Key F-6 and reference to illustrations.

## Distribution

Species appears rare in collections and is thus far known from two localities in Minas Gerais State, Brazil (Fig. 41).

*Telebasis racenisi* Bick & Bick, 1995

Figs 7j (♀ pthx); 11c (wings); 14i (lig); 18i; 22c; 23d (app); 39 (map)

*Telebasis racenisi* Bick & Bick, 1995: 35 (holotype ♂, Venezuela, Amazonas State, Buenos Aires-Ventuari, 19 iii 1957, leg. J. Rácenis; allotype ♀, Uruyen-Auyantepui, 27 v 1956, leg. Fernandez, both in MIZA).

## Specimens examined

Venezuela, Bolivar State: 1 ♂ paratype, Guayaraca-Auyantepui, 16 iv 1956, leg. J. Rácenis; 1 ♀ paratype, Puerto Ayacucho, 20 xi 1957, leg. J. Rácenis; 1 ♂ paratype, same but 02-05 vi 1982, leg. A. Chacón, G. Yepes. Peru, Madre de Dios Department: 1 ♀, Explorer's Inn, 39 km SW of Puerto Maldonado, 24 vii 2002, DRP, N. Smith; 1 ♂ same but 30 vii 2002 (all RWG).

## Diagnosis

Male distinctive by overall pale orange coloration (no black on thorax except on mid-dorsal carina on some specimens, see under remarks), long linear cercus with bilobate tip in lateral view (Fig. 22c), and a ventral tooth along 0.50 of ventral margin viewed medially (Fig. 18i) and medio-ventrally (Fig. 23d). Genital ligula

morphology (Fig. 14i) allies this species with *T. selaopyge* (Fig. 14m) but both differ by morphology of appendages (Figs 18i; 22c; 23d vs 18m; 22g). Pale thoracic coloration, lack of prothoracic horns, and unusual, distinctly tripartite condition of posterior prothoracic lobe (Fig. 7j) separate the female from other species.

#### Remarks

This species is unusual in possessing no black on thorax (except for mid-dorsal carina, see below), wings (Fig. 11c) stalked well before CuP, frons with poorly developed angle, and atypical appendages morphology. The genital ligula is small as in *T. gigantea* (Fig. 13n) and *T. selaopyge* (Fig. 14m), and there is no chitinated tubercle at base of flexure, which occurs in other members of this genus. Genital ligula morphology, largely black epicranium, and possession of a patch of pale hairs on medial surface of cercus suggest that this species is correctly placed in *Telebasis*. The original description of holotype male states that mid-dorsal carina is black, but it is pale in the three males I examined.

#### Distribution

Known from Venezuela, Peru, and Mato Grosso and Goiás States, Brazil (Fig. 39).

#### Biology

DRP (pers. comm.) observed the species in Peru, perching usually in sun spots along a 5 km trail through the forest, holding their wings above their abdomen like *Argia* Rambur, 1842. Both sexes perched on leaves or twigs 2-3 m up and were flycatching by flying through the vegetation and picking prey off the substrate, an unusual behavior for the genus.

### *Telebasis rubricauda* Bick & Bick, 1995

Figs 7k (♀ pthx), 9f (♂ pthx), 14j (lig), 18j, 22d (app), 37 (map)

*Telebasis rubricauda* Bick & Bick, 1995: 36 (holotype ♂, allotype ♀, Brazil, Rondônia [Mato Grosso on envelope], Abuna, 14 iii 1922, leg. J.H. Williamson, J.H. Strohm).

#### Specimens examined

Holotype ♂, allotype ♀ (UMMZ). Other specimens: Ecuador, Napo Province: 1 ♂, 1 ♀, pond near tributary of Río Payamino, road to Loreto, 1.7 km W of junction with Coca road, 13 vi 1995, leg. KJT (KJT); 2 ♂, same but leg. SWD (RWG); 1 ♂, 1 ♀, pond 8.2 km W of Río Payamino/ Coca Road on Loreto Road, 18 xi 1997, leg. JJD (JJD). Peru, Loreto Department: 6 ♂, Aguas Negras, 13 iii 1994, leg. J. Louton (RWG; USNM); Madre De Dios Department: 2 ♂, Tambopata-Cándamo Reserved Zone, Camp 5, E bank of Río Tambopata, cocha, 15 xii 1992, leg. M. Butt (BNHM; RWG). Brazil, Rondônia State: 2 ♂, Abuna, 14 iii 1922, leg. J.H. Williamson, J.H. Strohm (RWG). Bolivia, Cochabamba Department: 1 ♂, Carrasco Province, pool, Río Ivirgarzama, E of Tunari, 23 xi 1999, leg. KJT (RWG); 1 ♂, 1 ♀, Tiraque Province, farm pond near Río Zapata, 8.6 km E of Chapare River bridge in Villa Tunari, 12 xi 2001 (KJT); Santa Cruz Department: 1 ♂, Ichilo Province, Claudes pond, 3.5 km S of Buena Vista, 05 ii 2001, leg. JJD (JJD).

## Diagnosis

Male distinctive by unusual blue and red coloration of S8-10, a condition shared only with *T. livida*, but appendages (Figs 18j; 22d) and genital ligula (Fig. 14j) are different from those of *T. livida* (Figs 14e; 18e; 21t). Female (Key F-5) characterized by lack of prothoracic horns, incomplete supplementary transverse rim on posterior lobe of prothorax, oval depression behind medial 0.50 of mesostigmal plate and corresponding diagonal streak of black (Fig. 7k).

## Remarks

Males from Bolivia have S7 entirely blue save for narrow black ring at tip; in those from Peru and Brazil, a longitudinal black dorsal stripe connects black apical ring of S7.

## Distribution

A widespread species occurring from Carabobo State, Venezuela south along the Amazonian region bordering the E side of the Andes through Peru to Santa Cruz Department in Bolivia and Acre and Rondônia States in Brazil (Fig. 37). As Bick & Bick (1995) noted, specimens seem to be infrequently encountered and are poorly represented in collections.

## Biology

A pond species (label data).

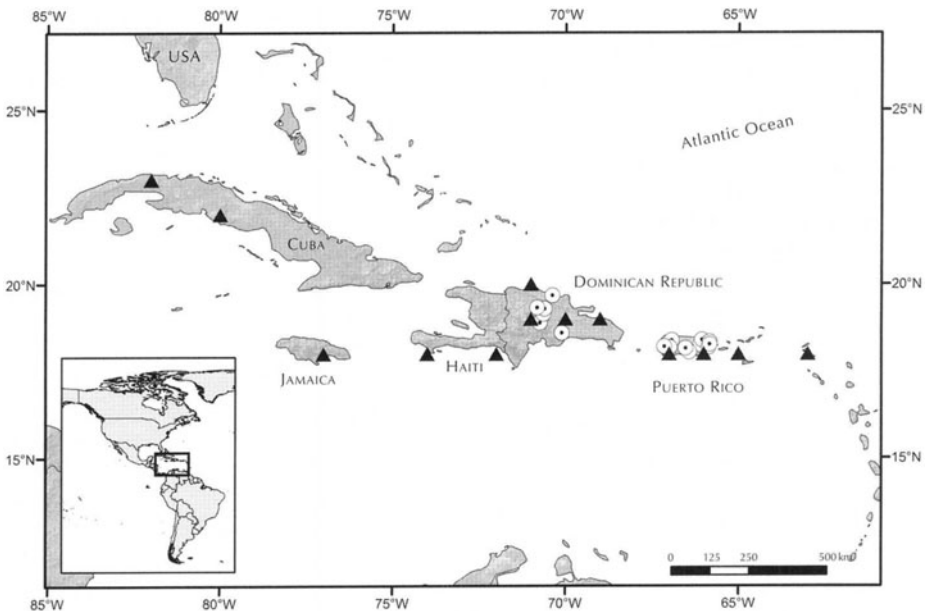


Figure 30: Distribution of *Telebasis dominicana* (▲) and *T. vulnerata* (⊙).



*Telebasis salva* (Hagen, 1861)

Figs 4l (♀ thx); 7l (♀ pthx); 14k (lig); 18k; 22e (app); 29 (map)

*Agrion salvum* Hagen, 1861: 85 (♂, incomplete ♀, Mexico, leg. Deppe, in MCZ).  
*Telebasis boucardi* Selys, 1868: lxx (5 reprint; ♂, ♀ “Des environs d’Orizaba, par MM. Boucard. M. de Bonvouloir l’a éalement recue du Mexique.”, in IRSN).  
*Erythrargion salvum* (Hagen). — Selys (1876: 962 [252 reprint]; redescription ♂, ♀).  
*Telebasis salva* (Hagen). — Kirby (1890: 155; catalog).

## Specimens examined

1 ♂ Syntype of *Agrion salvum* (MCZ); 1 ♂, 1 ♀ syntypes of *Telebasis boucardi* (IRSN). Other specimens: USA, California State, Butte County: 1 ♂, Bidwell City Park, by Big Chico Creek, Chico, 14 vi 1975, leg. RWG; Yolo County: 1 ♂, Cache Creek at William H. “Bill” Davis Memorial Picnic Area, by CA highway 16, 9.6 km N of Rumsey, 03 vii 1978, leg. RWG, J.A. Garrison; Napa County: 3 ♂, Pope creek, ca 2.4 km W of Lake Berryessa, 10 vi 1978, leg. RWG, J.A. Garrison; 3 ♂, cattle tank and seepage area at Samuel spring, S of Pope Creek and W of Lake Berryessa, 27 v 1979, leg. RWG, J.A. Garrison; Stanislaus County: 6 ♂, 1 ♀, Del Puerto Canyon at N Fork of Del Puerto Creek, ca 22.5 km W of Patterson, 08-09 vi 1975, leg. RWG, J.A. Garrison; 1 ♂, same but 04 vi 1977; Ventura County: 3 ♂, 1 ♀, Sespe Creek, 6.5 km N of Fillmore, 05 ix 1982; Los Angeles County: 3 ♂, 1 ♀, Warm springs Creek, by lake Hughes Road, 15 vi 1985, leg. RWG; 1 ♂, Castaic Power plant, Templin highway nr. I-5, W of L. Castaic, 04 ix 1999, leg. RWG; 1 ♂, Los Angeles River, at end of Oxford road, 23 vi 2001, leg. RWG; Riverside County: 2 ♂, 2 ♀, Santa Rosa Plateau Preserve, 4 km SW of Murrieta, 25-26 v 1991, leg. RWG, P.A. Garrison; 1 ♂, Dos Palmas Nature Preserve, just E of Salton Sea, 30-31 v 1992, leg. RWG; San Diego County: 1 ♂, reservoir near Scissors’ Crossing, 06 ix 1986, leg. RWG, J.A. Garrison; Arizona State, Yavapai County: 1 ♂, 1 ♀, seepage at Skull Valley, 31 vii 1987, leg. RWG; 1 ♂, Page Springs Fish Hatchery ponds and Oak Creek, 06 x 1990, leg. RWG, J.A. Garrison; 2 ♂, 2 ♀, Santa Maria River at AZ highway 96, 08 x 1990, leg. RWG; Maricopa County: 1 ♂, Sycamore Creek (Sugarloaf Mountain), 3.2 km W of highway 87, Tonto National Forest, 03 viii 1992, leg. RWG; 1 ♂, Cave Creek at Ocotillo road, Cave Creek, 13 vii 1998, leg. RWG; Cochise County: 1 ♂, Hot Springs Canyon, about 3.2 km by foot NW of Hookers Hot Springs, 14:30-16:30 h, 20 ix 1996, leg. RWG; 1 ♂, pond at Slaughter Ranch, 26 km E of Douglas, 09 viii 1995, leg. RWG; New Mexico State, Grant County: 1 ♀, Bill Evans Lake, 05 viii 1995, leg. RWG, J.A. Garrison; Eddy County: 1 ♂, Sitting Bull Falls, Guadalupe Mountains, 24 viii 1998, leg. RWG, J.A. Garrison; Texas State, Williamson County: 2 ♂, 1 ♀, Mustang Creek, by Carlos G. Parker boulevard (= Loop 427), Taylor, 25 viii 1976, leg. J.E. Hafernik Jr. Mexico, Baja California Sur State: 1 ♂, San Ignacio, 14 v 1969, leg. T.W. Fisher; 23 ♂, 5 ♀, Rancho San Enrique, pond and stream at km 51, 51 km E of Villa Insurgentes, 01-04 x 1984, leg. RWG, J.A. Garrison; 2 ♂, 2 ♀, stream 14 km W of highway 1 on road to San Javier, SW of Loreto, 05 x 1984, leg. RWG, J.A. Garrison; 2 ♂, same but 31 viii 1985; 2 ♂, 1 ♀, Primer Agua, 7 km W of highway 1 and 6 km S of Loreto at km 114, 02 x 1984, leg. RWG, J.A. Garrison; 1 ♂, same but 31 viii 1985; 6 ♂, Las Parras, ca 18 km from highway 1 on road to San Javier, SW of Loreto, 01 x 1985, leg. RWG; Sonora State: 2 ♂, 1 ♀, Hermosillo, 20-22 v 1955, leg. B.M.; Veracruz State: 3 ♂, 1 ♀, pond 28 km NE of Huatusco, by highway 66 (900 m), 11 viii 1976, leg. RWG; 1 ♂, Río Otapa, 8 km S of

La Tinaja (90 m), 20 viii 1976, leg. RWG, J.A. Garrison; 5 ♂, 3 ♀, pond 13 km S of La Tinaja (90 m), 13 viii 1976, leg. RWG, J.A. Garrison; 1 ♂, La Palma, NW of Sonrecomapan, 05 xii 1975, leg. C.M., O.S. Flint Jr.; Morelos State: 3 ♂, La Fuente, Municipio de Jiutepec, 10 km W of Cuernavaca (1300 m), 17 ix 1983, leg. RWG; Oaxaca State: 1 ♂, 1 ♀, 20 km S of Oaxaca by highway 175, 07 viii 1982, leg. J.E. Hafernik Jr. Belize: 1 ♂, Gallon Jug, 15 x 1992, leg. T. Boomsma. Costa Rica, Cartago Province: 1 ♂, Río Reventazón, SE of Turrialba, by highway 10, 10 viii 1979, leg. RWG, J.A. Garrison. Colombia, Magdalena Department: 1 ♂, 1 ♀, Santa Marta, 19 xii 1916, leg. J.H., E.B. Williamson (all RWG).

### Diagnosis

This well-known and widely distributed species is similar only to *T. byersi* and *T. incolumis* and is diagnosed under Keys M-4 and F-4; further differentiation among females of these three species is given under *T. incolumis*.

### Remarks

Originally described from one ♂ and one incomplete ♀, I was unable to find the ♀, but the ♂ fits the original description; labels of syntype ♂ read: "A. salvum/ Hagen," "Hagen [printed]". MCZ 12284. Syntypes ♂, ♀ of *Telebasis boucardi* have following labels: "Putla/Mexique [green holograph label by Selys]," "salva/(Boucardi [white holograph label by Selys])" (von Ellenrieder & Garrison 2007: 29).

Specimens from Baja California, Mexico, have the most extensive dark markings with mesepisternal black occupying 0.70 or more and dorsal finger of black almost touching dorsal end of humeral suture, and isolated mesepimeral stripe occupying 0.70 or more of sclerite.

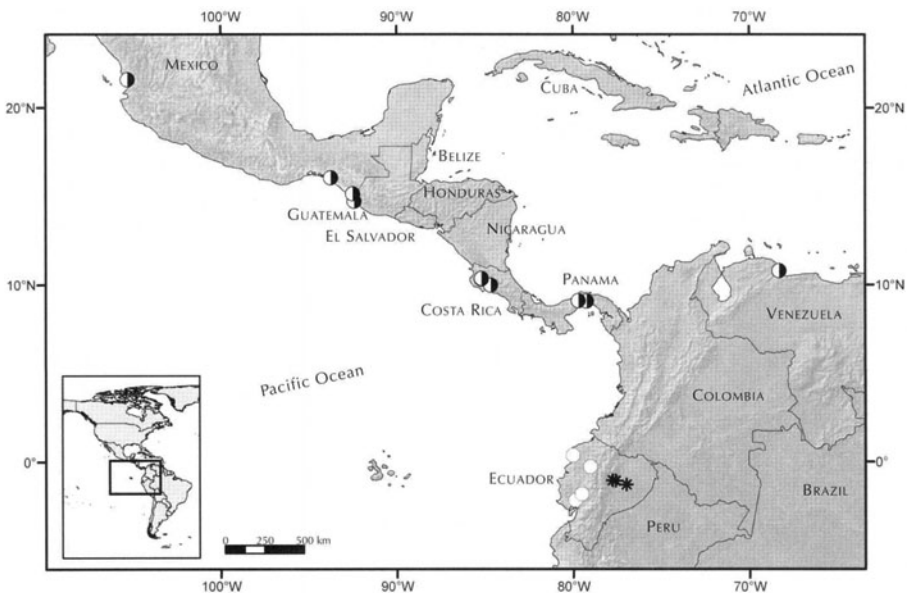


Figure 31: Distribution of *Telebasis brevis* (○), *T. flammeola* (\*), and *T. isthmica* (●).

## Distribution

*T. salva* occurs throughout SW USA from as far north as Shasta County in California State, south through Colombia (Fig. 29). Distribution records from Abbott (2008) show *T. salva* to approach distribution of *T. byersi* in E Texas.

## Biology

Commonly occurring at almost any pond, seep, marsh, or pool where adults can be found flying close to vegetation. Robinson & Frye (1986) studied dynamics of a Texas population.

### *Telebasis sanguinalis* Calvert, 1909

Figs 2e (♀ head); 7m (♀ pthx); 14l (lig); 18l; 22f (app); 41 (map)

*Telebasis sanguinalis* Calvert, 1909: 192 (9 ♂ and parts of 14 others, 4 ♀, Brazil, Chapada, leg. H.H. Smith, in CM); — Tennessen (2002: 209; designation of lectotype ♂ in CM).

## Specimens examined

Bolivia, Santa Cruz Department: 2 ♂, 1 ♀, Velasco, pond NW of El Carmen Ruiz, 11 xi 1999, leg. KJT (KJT; RWG).

## Diagnosis

Male similar to more northerly *T. simulata* by elongate cercus with an accompanying seam; it differs from it by rear of head pale (dorsal 0.50 black in *T. simulata*, Fig. 1f), less extensive black epicranial markings (epicranium in *T. simulata* similar to that for *T. paraensei*, Fig. 2d), narrower cercus (Figs 18l; 22f; broader in *T. simulata*, Figs 18p; 22j), and posteriorly projected lateral lobe on genital ligula (Fig. 14l; lacking in *T. simulata*, Fig. 14o). Female has well developed prothoracic horns (Fig. 7m; small and stump-like in *T. simulata*, Fig. 7r) and prothoracic posterior lobe has lateral portions not so strongly erect (strongly erect and well differentiated in *T. simulata*).

## Distribution

Rare in collections, I only know of its occurrence from the type locality (Mato Grosso State, Brazil), and recent collections in Bolivia (Tennessen 2002). This species is allopatric to *T. simulata* by ca 1,400 km (Fig. 41).

## Biology

A pond species in Bolivia where Tennessen (2002) collected adults as they flew low in sparse emergent vegetation at shallow end of a large open pond between 15:00 and 16:30 h.

## *Telebasis selaopyge* De Marmels, 1989

Figs 7n (♀ pthx); 14m (lig); 18m; 22g (app); 39 (map)

*Telebasis selaopyge* De Marmels, 1989: 32 (holotype ♂, allotype ♀, Venezuela, Amazonas State, Departamento Río Negro, km 2, road San Carlos de Río Negro-Solano, in MIZA).

### Specimens examined

Venezuela, Amazonas State, Departamento Río Negro: 1 ♂ paratype, 7 km E of San Carlos de Río Negro, 09-12 iii 1984, leg. O.S. Flint, J. Louton (RWG); 1 ♂ paratype, same but km 2, road San Carlos-Solano, 04-13 iii 1984, leg. J. Clavijo (RWG); 1 ♀ paratype, same but 07-13 xi 1982 (MIZA).

### Diagnosis

Unusual appendage morphology (Figs 18m; 22g) with well developed bidentate ventro-apical tooth coupled with dorsal tooth at mid-length of cercus uniquely charac-

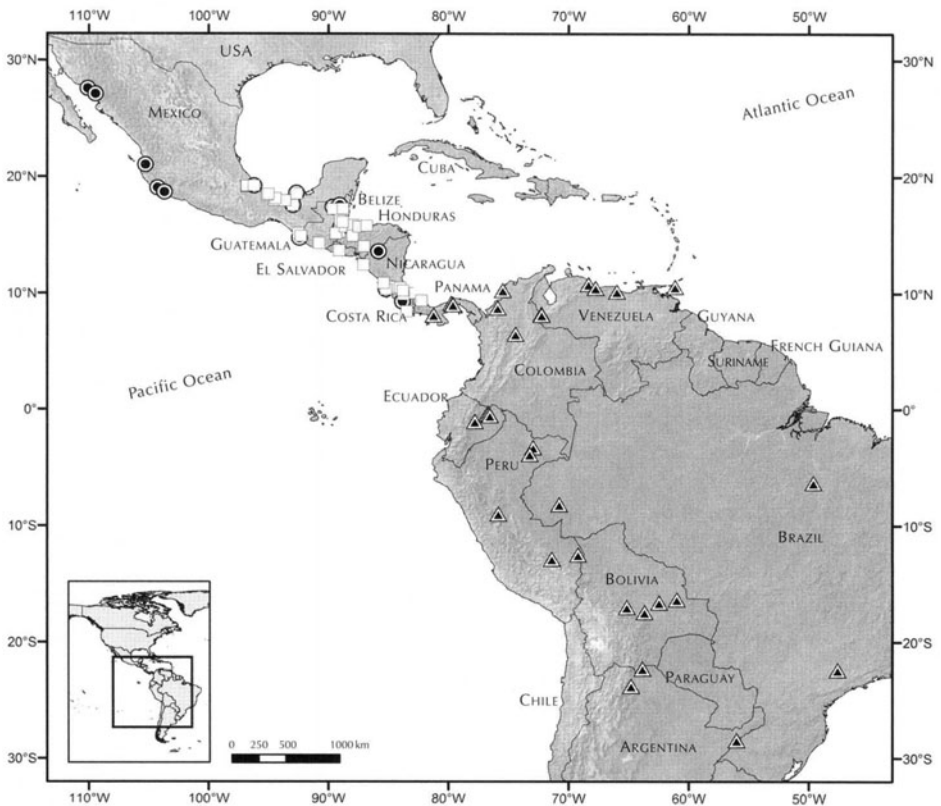


Figure 32: Distribution of *Telebasis digiticollis* (●), *T. griffinii* (▲), and *T. levis* (□).

terizes this species. A similar tooth is found on cercus of *T. farcimentum* (Figs 17i; 21g), but it is medially placed and the cercus though angulate like in *T. selaopyge*, is comparatively longer. Genital ligula morphology (Fig. 14m) approaches that of *T. farcimentum* (Fig. 13i), *T. gigantea* (Fig. 13n), and *T. racenisi* (Fig. 14i), but these species differ greatly in appendage morphology. Upright diagonal pair of ridges on medio-lateral margin of posterior lobe of prothorax and raised polished rim of medial portion of mesothoracic plate allows for recognition of female.

#### Remarks

De Marmels (1989: 33) suggested similarity with the Antillean *T. vulnerata* based on morphology of genital ligula and appendages, but Bick & Bick (1995: 38) stated that *T. vulnerata* "...lacks the 2 conspicuous ventral teeth in *selaopyge*." This is not the case as both *T. dominicana* (Figs 17f; 21d) and *T. vulnerata* (Figs 19e; 22o) have a bidentate tooth at the ventro-apical tip of cercus, but the genital ligula morphology (Figs 13f; 15c) is very different.

#### Distribution

Known only from original collections in Amazonas State, Venezuela (Fig. 39).

#### Biology

De Marmels (1989) collected this species over marshy meadows which bordered an outflow from a forest swamp by a road.

### *Telebasis simulacrum* (Calvert, 1909) comb. nov.

Figs 2g (♂ head); 7o-q (♀ pthx); 9g (♀ pthx); 14n (lig); 18n, o; 22h, i; 25q, r (app); 28 (body ♂); 35 (map)

*Skiallagma simulacrum* Calvert, 1909: 176 (4 ♂ and parts of 8 ♂, Brazil, Mato Grosso State, Cuyabá, leg. H.H. Smith, in CM).

*Helveciagrion simulacrum* (Calvert). — Machado (1980: 71; transfer to *Helveciagrion* gen. nov.).

*Telebasis lacustris* Jurzitza & Ráčenis, 1984: 251 (Bolivia, Beni Department, Espirito, Río Yacuma, 17 vii 1950, leg. W. Förster, in ZSM).

*Helveciagrion lacustris* (Jurzitza & Ráčenis). — Bick & Bick (1995: 13); — Heide-mann (1999: 327; synonymy as per pers. comm. of RWG); — Lencioni (2006: 124; synonymy).

#### Lectotype designation

A ♂ in CM labeled "Cuyabá [printed on white] C [written]/Brazil. [printed]," "TYPE/Skiallagma simulacrum Calv. [written]/PPCalvert det. 1909/AnCarMus. VIp [printed] 178/Orig. Pl V, ff. 95, 96 [written]" is hereby designated as lectotype of *S. simulacrum* (Figs 18n; 22h; 25q).

## Specimens examined

Lectotype ♂ and 3 ♂ paralectotypes (CM), 1 ♂ paralectotype (FSCA). Other specimens: Bolivia, Beni Department: 1 ♂ paratype of *T. lacustris*, Espirito, Río Yacuma, 25 vi 1981, leg. W. Hanagarth (GJ); Santa Cruz Department: 1 ♀, Velasco Province, pond 15 km NW of San Ignacio, 11 xi 1999, leg. KJT (KJT); 1 ♂, Buena Vista, leg. J. Steinbach (RWG). Argentina, Corrientes Province: 2 ♂, 2 ♀, Ituzaingó Department, Estancia San Juan Poriahú, 01 x 2003, leg. J. Muzón, P. Pessacq (MLP; RWG); 1 ♀, Laguna Iberá, Colonia Pellegrini, 03 xi 2003, leg. J. Muzón, P. Pessacq (RWG).

## Diagnosis

Overall blue body, approximate cerci which are ca twice as wide as long, and small upturned medial tooth visible in lateral view uniquely characterize the male (Figs 18n, o; 22h, i; 25q, r); conjoined shallow, oval mesepisternal fossae on either side of a largely obsolescent concave sinus, and rounded lateral prothoracic lobe (Figs 7o-q) will identify the female.

## Remarks

Synonymy of *T. lacustris* with *H. simulacrum* reported by Heidemann (1999: 327), Bick & Bick (1995: 13), and Lencioni (2006: 124) was based on my examination of the lectotype of *S. simulacrum* and a paratype of *T. lacustris*. In the original description of *S. simulacrum*, Calvert remarked upon the similarity in form and color between this species and *Acanthagrion chiribuanum*, but he placed the former species in *Skiallagma* because of the lack of postocular spots (present in *A. chiribuanum*). As Machado (1980) has shown, the degree of postocular spotting can be variable.

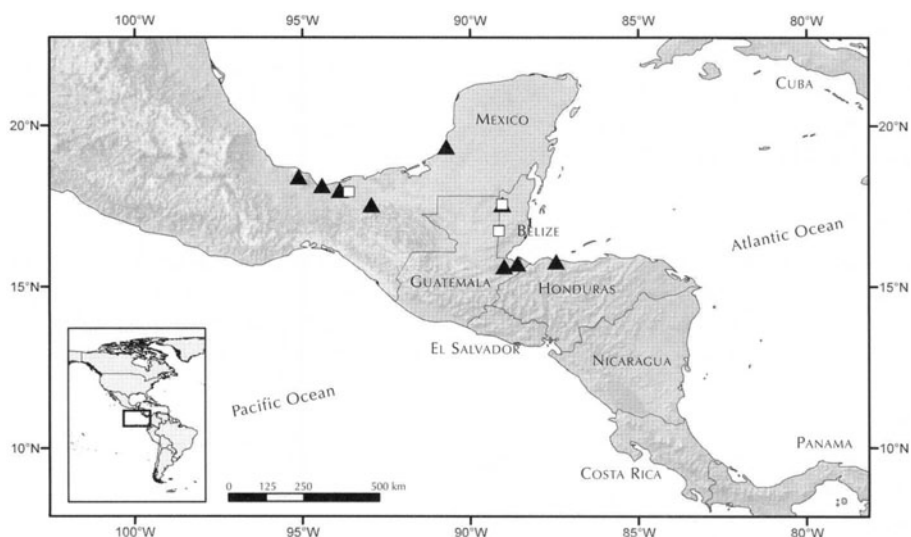


Figure 33: Distribution of *Telebasis boomsmae* (▲) and *T. collopistes* (□).

Calvert's (1909) placement of this species in *Skiallagma* Förster was based on the original description of that genus by Förster (1906). However, examination of a complete syntype ♂ of *S. baueri* in the UMMZ showed that it lacks an angulated frons, a generic character of *Telebasis*.

#### Distribution

Both *T. obsoleta* and *T. simulacrum* have been collected at Cuyaba, and *T. obsoleta* has been collected within the range of *T. simulacrum* in Bolivia. However, *T. simulacrum* is more localized than *T. obsoleta*, and is known from Mato Grosso and Rondônia States in Brazil (Calvert 1909; Machado 1980) south through Bolivia and NE Argentina (Fig. 35).

### *Telebasis simulata* Tennessen, 2002

Figs 1f, 2f (♀ head); 7r (♀ pthx); 14o (lig); 18p; 22j; 25s (app); 41 (map)

*Telebasis simulata* Tennessen, 2002: 205 (holotype ♂, allotype ♀: Brazil, Amazonas State, Manaus, 20 vi 1922, leg. J.H. Williamson, J.W. Strohm, in UMMZ).

#### Specimens examined

Trinidad, St. George County: 2 ♂, pond on Antigua Road, 0.16 km S of the junction with E Main Road, 23 vii 1975, leg. K.W. Knopf; 1 ♂, same data but 31 vii 1975. Venezuela, Bolivar State: 1 ♂, tributaries of Río Botanamo, 20-50 km E of Tumeremo, 27 vii 1987, leg. TWD (RWG). Brazil, Amazonas State: 7 ♂, 1 ♀, Manaus, 20 vi 1922, leg. J.H. Williamson, J.W. Strohm; 1 ♂, 1 ♀, same but 22 vi 1922 (all RWG).

#### Diagnosis

Male similar by elongate cercus with an accompanying seam to more southerly *T. sanguinalis* with which it was long confused (Tennessen 2002); all earlier records of *T. sanguinalis* from north of the Amazon River should be credited to *T. simulata*. *Telebasis simulata* is diagnosed under *T. sanguinalis*.

#### Distribution

Relatively common in collections, this species occurs from Manaus north into Venezuela, Guyanas, and Trinidad (Fig. 41). Lencioni (2006: 218) lists *T. simulata* from Amazonas and Bahia States, Brazil; however, he (pers. comm.) states that these specimens, which are now not in his possession, may be misidentified.

#### Remarks

This species is allopatric to *T. sanguinalis* by about 1,400 km.

#### Biology

Likely a pond species but nothing on habits has been recorded.

*Telebasis theodori* (Navás, 1934)

Figs 8a, b (♀ pthx); 14p (lig); 19a, b; 22k, l; 25t (app); 43 (map)

*Argia theodori* Navás, 1934: 182 (holotype ♀, Brazil, “Brasil: Caixias, diciembre de 1931,” in UMMZ).

*Telebasis theodori* (Navás). — Kennedy (1936: 811; generic transfer); — Garrison (1991: 460; synonymy of *T. aureipennis*).

*Telebasis aureipennis* Jurzitza, 1980: 185 (holotype ♂, Argentina, Misiones Province, Destacamento Cataratus [sic Cataratas] near Iguazú waterfalls, 14 iv 1979, unknown depository).

## Specimens examined

Holotype ♀ (UMMZ). Other specimens: Brazil, Santa Catarina State: 1 ♀, São Bento do Sul, i 1944, leg. A. Maller; 1 ♂, Nova Teutonia, 11 iii 1942, leg. F. Plaumann; 1 ♂, 2 ♀, same but xi 1972; 7 ♂, same but xii 1972; 1 ♂, same but ii 1973; 1 ♂, same but ii 1974; 1 ♀, same but ii 1975 (all RWG). Argentina, Misiones Province, 1 ♂, paratype of *T. auripennis*, Parque Nacional Iguazú, Destacamento Calaratas [sic Cataratas], 12 vi 1975, leg. G. Jurzitza (GJ).

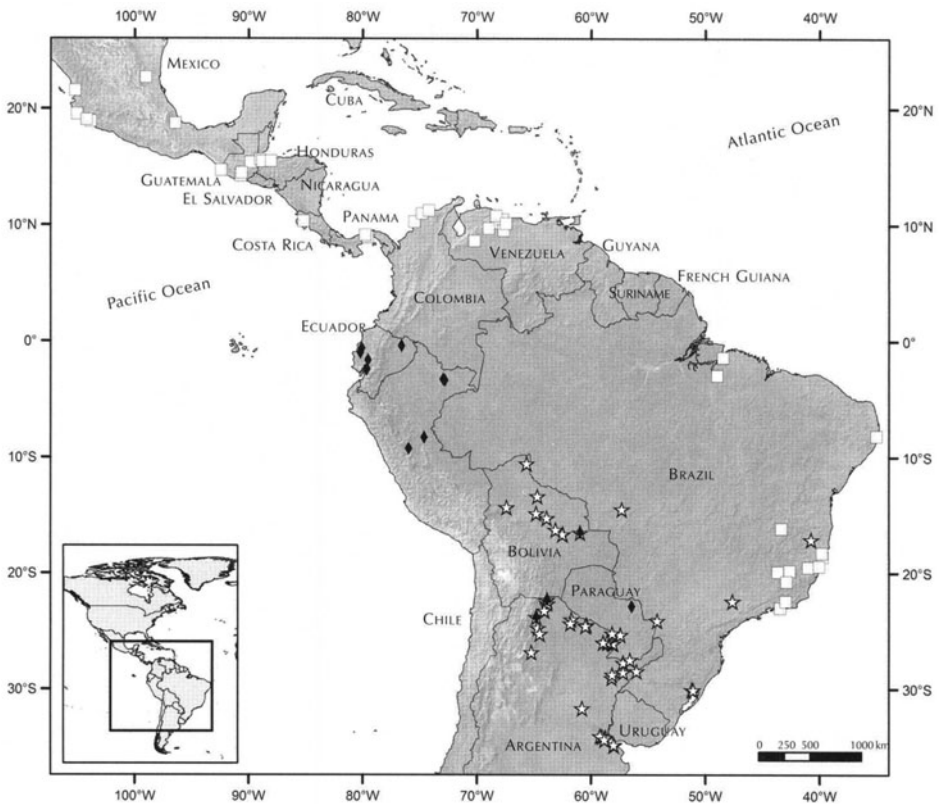


Figure 34: Distribution of *Telebasis filiola* (□), *T. inalata* (◆), and *T. willinki* (☆).



## Diagnosis

Flavescent colored wings, cercus medially with an elongate mostly vertical tooth (Figs 19a, b), and genital ligula morphology (Fig. 14p) separate this species from all others. It is similar to *T. erythrina* in all characters except appendage morphology (Figs 17h; 21f; 25k), and it is diagnosed under that species. Female has also flavescent wings; it is diagnosed by its moderately developed prothoracic horns and upright posterior margin of mesothoracic plate followed by an oval depression on mesepisternum (Figs 8a, b).

## Distribution

NE Argentina and SE Brazil (Fig. 43).

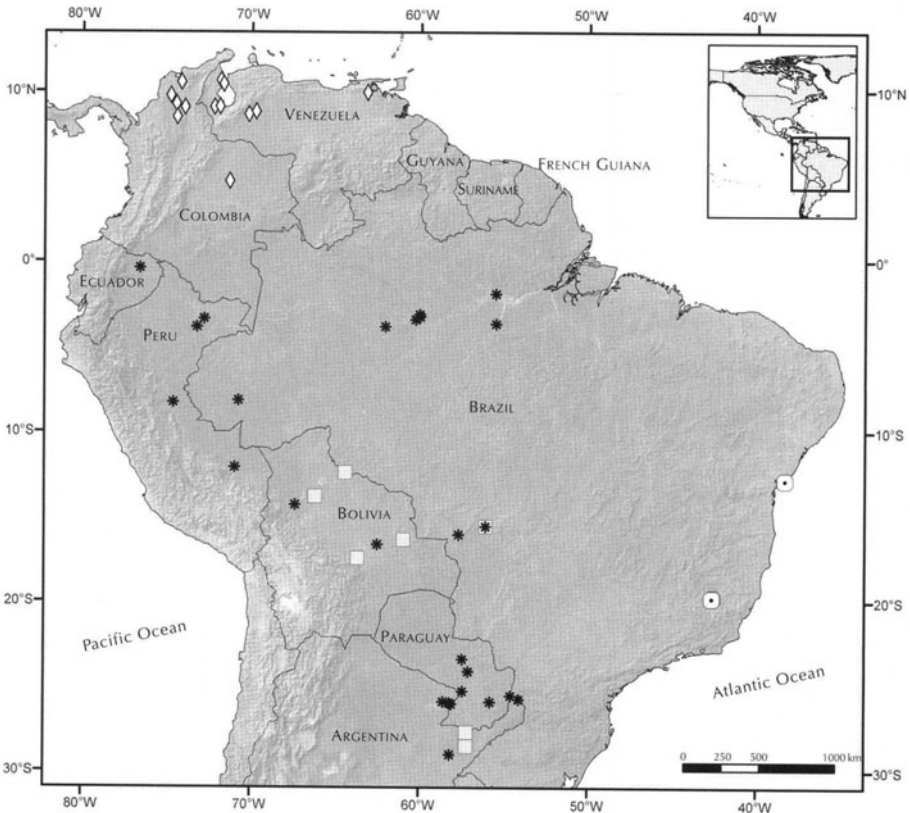


Figure 35: Distribution of *Telebasis obsoleta* (\*), *T. simulacrum* (○), *T. vulcanoae* (□), and *T. williamsoni* (△).

*Telebasis versicolor* Fraser, 1946

Figs 9h (♂ pthx); 15a (lig); 19c; 22m; 25u (app); 42 (map)

*Telebasis versicolor* Fraser, 1946: 42 (holotype ♂: Colombia, Putumayo Department, Umbría, in the valley of the Upper Putumayo River, 06 i 1931, leg. W.D. Hincks, in BNHM).

## Specimens examined

Ecuador, Napo Province: 1 ♂, Reserva Étnica Waorami, 1 km S Onkone Gare Camp, Transect Ent. Fogged Lot# 927 (0°39'10"S, 76°26'00"W), 07 x 1994, T.L. Erwin et al. (RWG); 1 ♂, same but 09 x 1994 (USNM).

## Diagnosis

Long, forcipate cerci thick at base, with a medially directed supplementary tooth, and quadrate middle lobe of prothorax uniquely characterize the male. Closest species by morphology of appendages and genital ligula is *T. corbeti*, and both are diagnosed under that species. Female of *T. versicolor* is unknown.

## Distribution

Amazonian region of S Colombia and Napo Province in Ecuador (Fig. 42).

## Biology

The two males from Ecuador were fogged (label data), i.e. passively collected by applying a biodegradable insecticide in the forest canopy. Samples fell to the ground where they were collected from plastic trays at ground level.

*Telebasis vulcanoae* (Machado, 1980) comb. nov.

Figs 4m (♂ thx); 8c, d (♀ pthx); 9i (♂ pthx); 15b (lig); 19d; 22n; 25v (app); 35 (map); Plate IIb (♂)

*Helveciagrion vulcanoae* Machado, 1980: 61 (holotype ♂, Brazil, Minas Gerais State, Parque Estadual Rio Doce, Lagoa Terceira, iv 1959, leg. ABMM, Erikson; allotype ♀, Lago Dom Helvécio, 18 v 1980, leg. Vulcano, Pereira, Monteiro, Mascarenhas, both in ABMM).

## Specimens examined

Brazil, Bahia State: 1 ♂, Salvador, Lauro de Freitas, 21 v 2005, leg. R. Penalva; 4 ♂, 4 ♀ (in tandem), same data but 14 i 2006; 3 ♂, 3 ♀ (in tandem), same data but 14 i 2006; Minas Gerais State: 1 ♂ paratype, Lago do Bispo, Parque Estadual do Rio Doce, 17 v 1980, Vulcano (all RWG).

## Diagnosis

Overall blue coloration (Pl. IIb) and male approximate appendages ally this species to *T. williamsoni*, and less closely to *T. obsoleta* and *T. simulacrum*. Cercus in *T. simu-*

*lacrum* (Figs 25q, r) is ca twice as wide as long (cercus ca 1.5 or less as wide as long in *T. vulcanoae*, Fig. 25v). Dorsally directed ridge of cercus in *T. obsoleta* (Fig. 22a) is strongly elevated and easily visible in lateral view (ridge reduced, slightly or not visible in lateral view in *T. vulcanoae*, Fig. 22n). Male is closest to *T. williamsoni* in cercus morphology, but posterior margin of cercus forms a raised ridge followed by a thin, pale lamellar ridge in *T. williamsoni* (Figs 19g; 25w), whereas medial and posterior margins of cercus in *T. vulcanoae* (Figs 19d; 25v) form a raised ridge and lack a supplementary pale, lamellar ridge. Female of *T. vulcanoae* has deep semicircular mesepisternal fossae with raised mid-dorsal sinus (Figs 8c, d) similar to those of *T. williamsoni* (Figs 8g, h), which separate them from *T. obsoleta* (oval mesepisternal fossae, Figs 7f, h) and *T. simulacrum* (mesepisternal fossae conjoined and with vestigial mid-dorsal carina, Figs 7o, q). Morphology of mesepisternal fossae in *T. vulcanoae* and *T. williamsoni* is essentially the same, but rear of head is pale (dark in *T. williamsoni*) and dark mid-dorsal thoracic stripe is narrower, forming little more than a hairline (Fig. 4m) in *T. vulcanoae* (wider in *T. williamsoni*, occupying  $\geq 0.25$  of mesepisternum).

#### Remarks

Recognition of this species was made possible by Ruy Penalva who sent me a male from Bahia which I determined as this species. He was later able to send me seven pairs in tandem which has allowed for recognition of the female.

#### Distribution

Minas Gerais and Bahia States in Brazil (Fig. 35).

#### Biology

Ruy Penalva encountered this species at a pond in Bahia state, most commonly in the late afternoon after 17:00-18:00 h (pers. comm.).

### *Telebasis vulnerata* (Hagen, 1861)

Figs 1b (♂ head); 3a (♂ occiput); 4n (♀ thx); 8e (♀ pthx); 10c (♂ metatibia); 15c (lig); 19e; 22o (app); 30 (map)

*Agrion vulneratum* Hagen, 1861: 86 (syntype mixed series, "Porto Rico (Moritz); Cuba (Poey); Essequibo, Guiana" in MCZ).

*Erythrargrion vulneratum* (Hagen). — Selys (1876: 960 [250 reprint]; comparative description of ♂, ♀ with *E. dominicanum*).

*Telebasis vulnerata* (Hagen). — Kirby (1890: 155; catalog).

#### Lectotype designation

Hagen's syntypes consist of a mixed series; in order to preserve current concept of the name, I designate a labeled "Portorico Mor." "Hagen [printed]" "A. prosectum [see under remarks]/ Hag" MCZ 12283 as lectotype. The lectotype ♂ is pinned together with a ♀ of *T. vulnerata*. Three of the other four specimens from Cuba (Poey) are *T. dominicana*, and the last ♂, with a manuscript label *A. rubens*, from Essequibo is missing its appendages and its identity cannot be determined.

## Specimens examined

Lectotype ♂, paralectotype ♀ (MCZ). Other specimens: Dominican Republic, Distrito Nacional: 6 ♂, Arroyo Bermejo, 4 km NNE of Hatillo & Autopista Duarte, 27 viii 1980, leg. RWG; 7 ♂, 1 ♀, same but 14 iv 1981, leg. RWG, J.A. Garrison; 1 ♂, 1 ♀, same but 10 viii 1983, leg. RWG; 1 ♂, same but 14 iv 1981, leg. RWG, J.A. Garrison; 2 ♂, same data but 29 vi 1984, leg. RWG; La Vega Province: 2 ♂, 1 ♀, small pond, 2 km S of Constanza, 22-24 vii 1970, leg. TWD; 1 ♂, 1 ♀, Río Yaque del Norte, 3.5 km N of Jarabacoa, 15 iv 1981, leg. RWG, J.A. Garrison; 4 ♂, 1 ♀, pasture & small wet areas, 19.5 km NE of Jarabacoa (200 m), 03 viii 1983, leg. RWG; 1 ♂, same data but 01 vii 1984; Santiago Province: 1 ♂, Río Janico, at Janico (480 m), 7 viii 1983, leg. RWG; Puerto Plata Province: 1 ♂, Río Yasica at Yasica Abajo, 06 viii 1983, leg. RWG. Puerto Rico, Ala de la Piedra Municipality: 1 ♂, Lago El Guineo, by highway 143 W of Divisoria, 17 ii 1980, leg. RWG; Añasco Municipality: 1 ♀, Añasco, 11 x 1981, leg. N. Gonzalez; Coamo Municipality: 1 ♂, 1 ♀, Río Descalabrado at Town of Río Cañas by highway 14, 01-06 i 1980, leg. RWG, J.A. Garrison; Guajataca Municipality: 7 ♂, Lago de Guajataca, at boy scout Camp and vicinity, 13 ii 1982, leg. RWG, J.A. Garrison; Guaynabo Municipality: 2 ♂, highway 173, 0.8 km W at Municipio de Aguas Buenas line, small creek, 22 iii 1981, leg. RWG, J.A. Garrison; Maricao Municipality: 4 ♂, Río Rosario, by highway 357, just W of Maricao, 15 ii 1982, leg. RWG, J.A. Garrison; Mayaguez Municipality: 3 ♂, Mayaguez, 2 xi 1981, leg. H. Seda; 3 ♂, 1 ♀, Arroyo de Oro, past Zoological Gardens just N of Mayaguez, 31 viii 1980, leg. RWG, J.A. Garrison; 6 ♂, same but 15 ii 1982; Río Grande Municipality: 7 ♂, 2 ♀, El Toro trail, just below top of El Toro Peak (ca 1,000 m), 18 vi 1982, leg. RWG; 3 ♂, 1 ♀, Bosque Experimental Luquillo, Campamento Eliza Colberg by highway 186, Caribbean National Forest (200 m), 14 ix 1979, leg. RWG, J.A. Garrison; 2 ♂, same but 16 xii 1979; 9 ♂, 1 ♀, same but 22 iii 1982, leg. RWG; 3 ♂, 1 ♀, same but 19 v 1982, leg. RWG; 3 ♂, 1 ♀, same but 08 vi 1982, leg. RWG; 4 ♂, El Yunque Forest, nr km 6 by highway 191, 11 xi 1979, leg. J.A. Garrison; small creek entering Embalse Patillas by highway 181 at km 31; 1 ♂, HM 4, N of Patillas, 17 ix 1979, leg. RWG, J.A. Garrison; 2 ♂, Río Piedras, stream just E of Borinquen Gardens, Río Piedras, 10 ii 1980, leg. RWG, J.A. Garrison; 1 ♂, Las Piedras, 28 v 1981, leg. M. Algarín (all RWG).

## Diagnosis

This dark colored species, confined to Puerto Rico and Hispaniola, can only be confused with *T. dominicana*. Cercus in male of *T. vulnerata* (Figs 19e; 22o) lacks the small medio-basal tooth present in *T. dominicana* (Figs 17f; 21d; 25j), and the para-proct in lateral view (Fig. 22o) is pointed, not blunt as in *T. dominicana* (Fig. 21d). Female has well-developed, digitiform prothoracic horns (Fig. 8e) which are absent or appear as vestigial lobes in *T. dominicana* (Fig. 6g).

## Remarks

Early listings of both *T. dominicana* and *T. vulnerata* are confusing and even contradictory. Thus Hagen (1867: 290) associated the name *Pyrrhosoma vulneratum* with material from Cuba ("At Cardenas, in woods, July") and further added: "In the [original] description of the male [of *A. vulneratum*], (Neur. of N. Amer. P. 86) another species, *A. praeseptum* Hagen, from Porto Rico, is erroneously united with this. Probably *A. discolor* Selys, l. c. [1857] p. 466, (nec Burm.) is identical with *A. vulneratum*." Selys (1876) based on comparison with Hagen's description,

restricted use of the name *vulneratum* to the pair from Puerto Rico, but the name *vulneratum* continued to be variously applied to specimens from Cuba, Jamaica, Essequibo in Guiana (Klots 1932), and even Central America (Steinmann 1997: 362). I (Garrison 1986b) compared size, female prothoracic morphology, and habitat preferences of this species with those of *T. dominicana*.

### Distribution

Endemic to Puerto Rico and Hispaniola (Fig. 30). Questionable records of this species from Cuba and Jamaica persist in the literature (Westfall & May 2006); however, I have seen no bona fide *T. vulnerata* from anywhere outside of Puerto Rico and Hispaniola. Records from Cuba stem from Hagen's original description and they represent *T. dominicana*. The species is not currently listed from that island (Trapero & Naranjo López 2003). The Jamaican record stems from Wilson (1911) and it was repeated by Whitehouse (1943: 52) who states "It is not clear why Gowdey (1926) and Klots (1932) ignored Wilson's record, unless they considered his record as referring to *dominicanum*." Unless evidence to the contrary is found, I believe that records of *T. vulnerata* from Jamaica should be considered erroneous.

### Biology

This species is a forest dweller and seems to avoid open areas typically inhabited by *T. dominicana*. As reported by Garrison (1986b), both appear to be sympatric but allotopic. Flint et al. (2006) recorded it as being as widespread as *T. dominicana* in the Dominican Republic but noted that it preferred higher elevations and more shady sites.

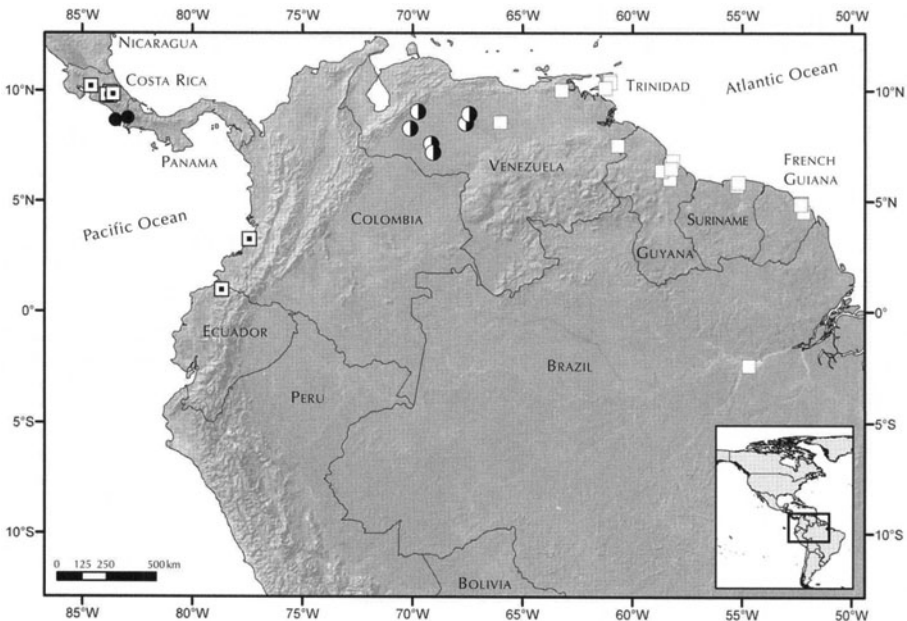


Figure 36: Distribution of *Telebasis aurea* (●), *T. bastiaani* (◐), *T. demarara* (□), and *T. garleppi* (◻).

*Telebasis watsoni* Bick & Bick, 1995

Figs 8f (♀ pthx); 9j (♂ pthx); 15d (lig); 19f; 22p (app); 42 (map)

*Telebasis watsoni* Bick & Bick, 1995: 40 (holotype ♂, Peru, Huanuco Department, Shapajilla, 11 vii 1938, leg. F. Woytkowski; allotype ♀, San Martin Department, vicinity of Rioja, 17 ix 1936, F. Woytkowski, both in UMMZ).

Specimens examined

Peru, Huanuco Department: 1 ♀, Shapajilla [now Chapajilla] N to Tingo María and NE of Naranjillo, 11 vii 1938, leg. F. Woytkowski; 1 ♂, same but 20 vii 1938 (all RWG).

Diagnosis

Male appendages morphology (Figs 19f; 22p) is most similar to *T. livida* (Figs 18e; 21t) but ventro-distal tooth in *T. watsoni* is diagonally placed across medial portion of cercus and is not confined to border as in *T. livida*. Both differ strongly in body coloration (no blue in *T. watsoni*) and especially by genital ligula morphology (Figs 14e; 15d). The long inner fold and shape of distal segment of genital ligula allies it

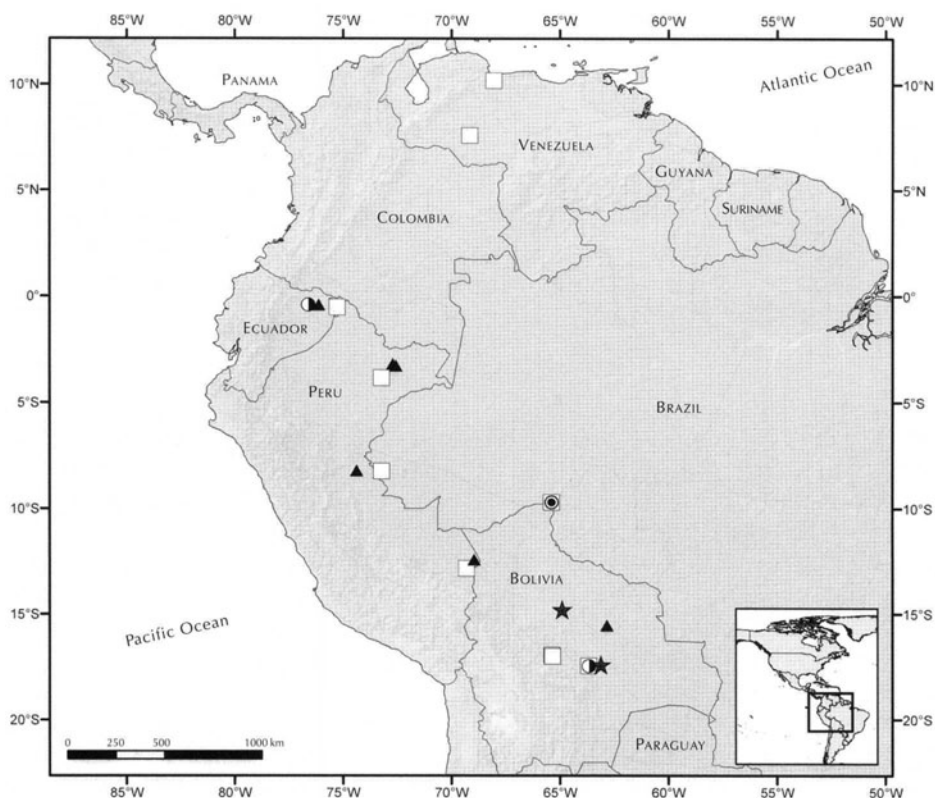


Figure 37: Distribution of *Telebasis bickorum* (●), *T. dunklei* (▲), *T. gigantea* (★), *T. leptocyclus* (⊙), and *T. rubricauda* (□).

with *T. carota* (Fig. 12m) and *T. milleri* (Fig. 14f), but it differs strongly in appendages morphology from both. Black oval depression immediately posterior to arched posterior margin of mesostigmal plate and moderately developed prothoracic horns (Fig. 8f) characterize female.

#### Distribution

Yungas forest from San Martín south through Junín Departments in Peru (Fig. 42).

#### *Telebasis williamsoni* sp. nov.

Figs 4o (♀ thx); 8g, h (♀ pthx); 11d (♂ wings); 15e (lig); 19g; 22q; 25w (app); 35 (map)

#### Etymology

I name this species *williamsoni* (noun in the genitive case) in honor of the intrepid collector and discoverer of this species, the late Edward Bruce Williamson, who contributed so much to the study of neotropical Odonata.

#### Specimens examined

Colombia, Magdalena Department, ♂ holotype, El Banco (9°02'50"N, 73°58'41"W, 46 m), 25 i 1917, leg. J.H. Williamson, E.B. Williamson (UMMZ); 228 ♂ paratypes, 42 ♀ paratypes: 6 ♂, 5 ♀, same data as holotype; 7 ♂, 9 ♀, same but 23 i 1917 (ABMM; RWG; UMMZ); 6 ♂, 3 ♀, same but 24 i 1917; 1 ♂, 1 ♀, same but 25 iv 1917 (RWG; UMMZ); 4 ♂, Fundación, S of Aracataca (10°31'17"N, 74°11'12"W, 45 m), 09 i 1917, leg. J.H. Williamson, E.B. Williamson (RWG; UMMZ); 47 ♂, 1 ♀, same but 12 i 1917 (ABMM; RWG; UMMZ); Bolívar Department: 1 ♂, Palermo (9°15'N, 74°29'W, 21 m), 19 i 1917; 1 ♂, 1 ♀, Zambrano (9°44'58"N, 74°49'05"W, 5 m), 20 i 1917, leg. J.H., E.B. Williamson; 8 ♂, 4 ♀, Río Nuevo, between Magangué and El Banco, on lower Magdalena river Valley (8°29'N, 74°26'W, 46 m), 22 i 1917, J.H., E.B. Williamson (RWG; UMMZ); Meta Department: 1 ♂, El Porvenir (4°42'N, 71°19'W, 141 m), 20 ii 1979 (FSCA). Venezuela, Barinas State: 1 ♂, pond & swamp S of Barinas, 5 km off San Silvestre Road on road to E toward Haciendas Corocito/ La Persevera/ El Carmen (8°21'47"N, 70°04'52"W, 500 m), 26 xii 2000, leg. DRP, N. Smith (DRP); Monagas State: 1 ♂, Caripito [Cachipito], 19 ix 1955, leg. F. Fernández Yépez, C.J. Rosales (MIZA); Portuguesa State: 2 ♂, San Nicolás, Hacienda El Pilar, 03-05 xii 1991, leg. J. De Marmels (MIZA; RWG); Zulia State: 1 ♂, Río de la Concepción, Ciénaga de Juan Manuel, between mouth of Río Santa Ana and Río Catatumbo, 19 iv 1991, leg. A.L. Vilorio (MIZA); 1 ♂, El Guayabo (10°37'20"N, 71°51'12"W), 20 iv 1920, leg. J.H., E.B. Williamson, W.H. Ditzler; 3 ♂, 3 ♀, Encontrados (9°03'51"N, 72°13'55"W), 23 iv 1920; 133 ♂, 9 ♀, same but 25 iv 1920 (BNHM; MIZA; RWG; UMMZ, USNM); 3 ♂, Santa Bárbara (9°05'00"N, 71°54'18"W), 7 viii 1976, leg. J. González (MIZA; RWG); 1 ♂, 5 ♀, same but leg. J. Rácenis (MIZA; RWG); 1 ♀, Río Bravo, 09 viii 1953, leg. J. Rácenis (MIZA).

## Male holotype

**Head:** Labium ivory white, labrum, clypeus, entire face to antefrons including anterior part of antennifer blue, epicranium metallic black with dull blue diagonal arm extending from ocellar triangle to base of antenna, occipital bar metallic black; antennifer, scape, pedicel (flagella missing) dark brown; rear of head black except for area around foramen and ventral most part of head, a dusting of white pruinosity overlaying rear of head.

**Thorax:** Prothorax blue, becoming pale blue laterally, darkened with brown along medial margin of middle lobe; posterior lobe dark brown except for blue at lateral margin, rounded with rim erect, especially so laterally, its base recessed relative to posterior portion of middle lobe; thoracic carina metallic black, medial 0.50 of mesepisternum metallic black, remainder of mesepisternum pale blue, a dark brown stripe on anterior 0.33 of mesenfraepisternum and humeral suture, broader below with posterior finger of black and narrowing above with dorsal 0.25 abruptly excavated posteriorly so that an abrupt posteriorly directed offshoot covers mesopleural fossa, remainder of mesepimeron and mesenfraepisternum blue with isolated inverted triangular metallic black spot at dorsal 0.33 of obsolete interpleural suture, metapleural fossa brown, remainder of synthorax including venter of thorax and base of coxae pale blue. Legs pale blue becoming ivory white distally with brown on posterior margins and tips of femora and washing laterally over onto sides, armature black; tibial spurs longer than intervals between them; tarsi pale, dark at extremities. Wings hyaline, Px in Fw 11(left)/ (10 right); Px in Hw 9;  $RP_2$  originating at Px 5 in Fw, at Px 4 in Hw; pterostigma brown, rhomboidal, surmounting one cell.

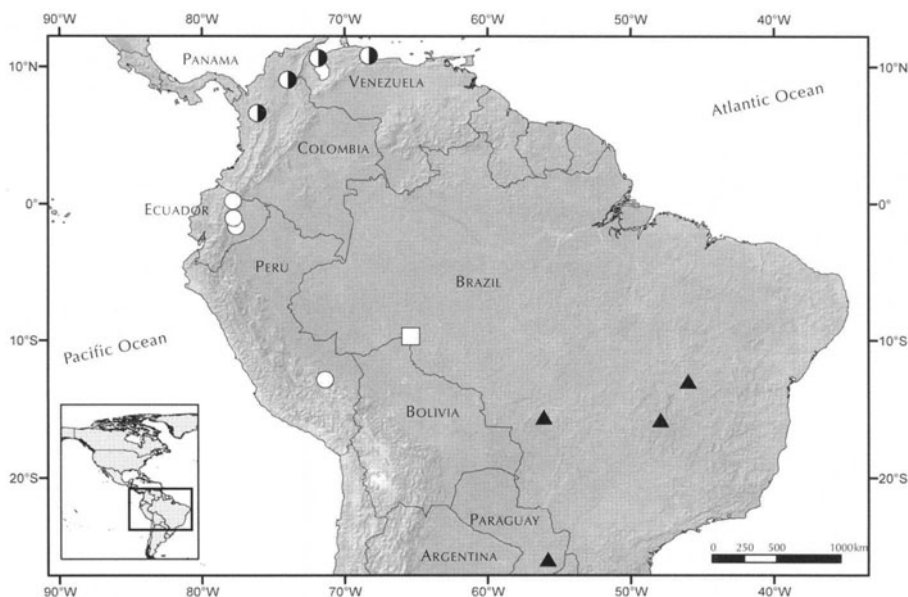


Figure 38: Distribution of *Telebasis abuna* (□), *T. coccinea* (▲), *T. garrisoni* (●), and *T. livida* (○).



**Abdomen:** S1 pale blue laterally, dorsally with longitudinal brown stripe joining black annulus; S2 blue, black dorsally except at basal 0.20, gradually extending laterally at apical 0.80, connecting with black annulus; S3-6 blue with irregular black spot dorsally on distal 0.25 connecting with black annulus; S7 blue laterally and black dorsally with narrow blue ring at anterior 0.10; S8-9 blue; S10 black, blue lateroventrally. Cerci brown with pale laminate distal rim, paraprocts black. Genital ligula (as in Fig. 15e), long and narrow, with inner fold small, extending to 0.10 of apical segment and with small raised sclerotized semicircular swelling at sides of flexure; apical segment in lateral view expanded laterally and lacking accessory lobes or processes. Cercus in lateral view (Fig. 22q) shorter than S10, and ca 0.90 of paraproct length, rhomboidal, angulate along distal 0.50, tip narrowed with small, slightly upturned pale laminate rim; cercus in medio-dorsal view (Fig. 19g) transverse with distal black costate rim forming a moderately raised transverse tooth becoming prominent medially, this tooth followed distally by pale thin laminate rim; cerci in dorsal view (Fig. 25w), each ca 1.5 times as wide as long, approximate, with subapical tooth of both cerci meeting medially. Paraproct rounded and scoop-like dorsally.

**Dimensions:** Hw 16, abd 24.

#### Variation in female paratypes

Head and thorax similar to male but pale color entirely ochraceous brown, metallic markings on epicranium less extensive than in holotype, diagonal pale streaks on epicranium confluent with pale ocher on face thus isolating transverse spot latero-posteriorly to median ocellus, and with pale occipital bar; rear of head with dusting of pruinosity in mature specimens. Entire prothorax light brown, paler laterally, undifferentiated posterior lobe undifferentiated, with lateral margin meeting propleuron at obtuse angle, prothorax with no prothoracic horns (Fig. 8h), mesostigmal plate transverse, ca 3 times as wide as long, interlaminal sinus with hind margin demarcated by widely obtuse v of carina followed posteriorly by semicircular mesepisternal fossae, these separated by thick raised carina; thorax (Fig. 4o) with mid-dorsal stripe occupying 0.30 of mesepisternum, a vestige of an isolated black spot below obsolete interpleural suture and on mesepisternal fossa, a wash of orange along humeral suture; remainder of synthorax as in male. Wings with pterostigma pale ocher; females retain the pale pterostigma even when old. Abdomen blue-gray becoming darker dorsally with dark dorsal (S2) to dorso-lateral (S3-7) brown on apical 0.10 of segment; S8-10 brownish, slightly darker laterally on S9; cerci and ovipositor brown, the latter not extending beyond cerci; paraprocts dark brown. Px in Fw 9-11, in Hw 8-11; origin of  $RP_2$  at Px 5 in Fw, at Px 4 in Hw; Hw 15-17; abd 24-26.

#### Variation in male paratypes

Size among males varies but little: Px in Fw 9-11, in Hw 8-9; origin of  $RP_2$  in Fw at Px 5, in Hw at Px 4; Hw 14-16; abd 23-25. Males from Fundación on average have more extensive areas of black on prothorax and thorax compared to less heavily marked males from El Banco; in the former, black bordering middle prothoracic lobe extends beyond base of prothoracic posterior lobe, and humeral stripe of thorax connecting dorsally to black of interpleural suture is thicker; in most males from El Banco, humeral stripe is a thin brown line, almost obsolete, tinged with orange as

shown in Fig. 4o. However, some males from El Banco are as heavily marked as those from Fundación. Young males have pale colored pterostigma like females, but this darkens to dark brown with age.

### Diagnosis

Similar to *T. vulcanoae*, and less so to *T. obsoleta* and *T. simulacrum*. Cercus in *T. simulacrum* (Figs 25q, r) is ca twice as wide as long (cercus ca 1.5 or less as wide as long in *T. williamsoni*, Fig. 25w). Dorsally directed ridge of cercus in *T. obsoleta* (Fig. 22a) is strongly elevated and easily visible in lateral view (ridge reduced, not visible in lateral view in *T. williamsoni*, Fig. 22q). Male is closest to *T. vulcanoae* in appendages morphology. Posterior margin of cercus in *T. williamsoni* (Figs 19g; 25w) forms a raised ridge followed by a thin, pale lamellar ridge (medial and posterior margin of cercus in *T. vulcanoae* (Figs 19d; 25v) forms a raised ridge and without supplementary pale, lamellar ridge). Female of *T. vulcanoae* and *T. williamsoni* are similar by deep semicircular mesepisternal fossae with raised mid-dorsal sinus (Figs 8c, d, g, h) which separate both from *T. obsoleta* (oval mesepisternal fossae, Figs 7f, h) and *T. simulacrum* (mesepisternal fossae conjoined and with vestigial mid-dorsal carina, Figs 7o, q). As discussed under *T. vulcanoae*, morphology of mesepisternal fossae in *T. vulcanoae* and *T. williamsoni* is essentially the same, but rear of head is dark (pale in *T. vulcanoae*) and dark mid-dorsal thorax stripe is broader, occupying  $\geq 0.40$  of mesepisternum (Fig. 4o) in *T. williamsoni* (narrower in *T. vulcanoae*, occupying  $\leq 0.25$  of mesepisternum, Fig. 4m).

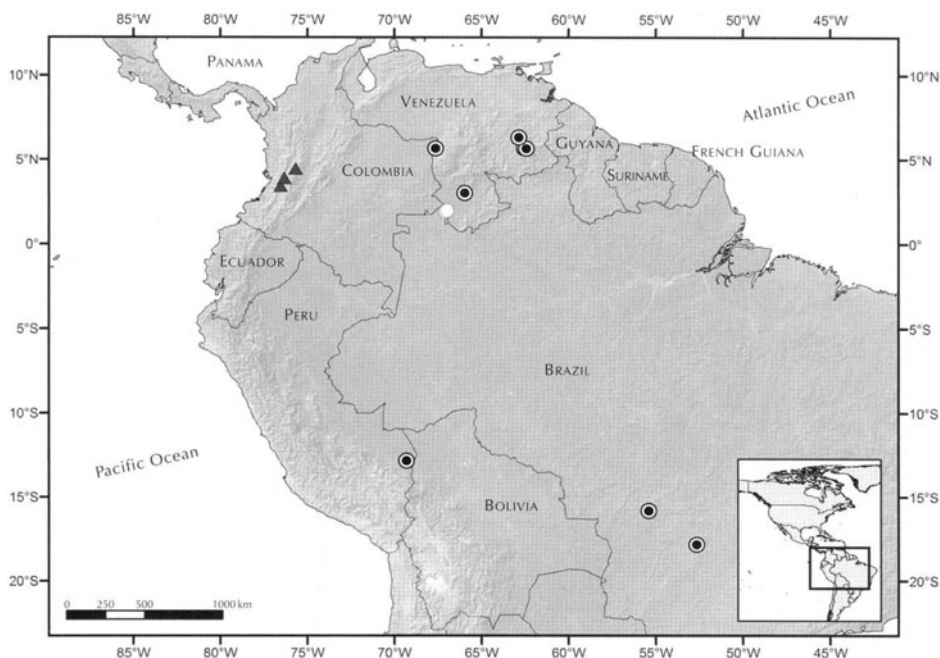


Figure 39: Distribution of *Telebasis farcimentum* (▲), *T. racenisi* (⊙), and *T. selaopyge* (○).

## Remarks

Vast majority of specimens were collected by Williamson expeditions to N Colombia in 1917 and N Venezuela in 1920.

## Biology

The male from Río de la Concepción, Zulia State, Venezuela, was taken in floating vegetation, in marsh of tea-colored water. DRP (pers. comm.) observed them perched on grasses and flying around at the edge of a pond.

## Distribution

Colombia and Venezuela (Fig. 35).

*Telebasis willinki* Fraser, 1948

Figs 8i (♀ pthx); 15f (lig); 19h; 22r; 25x (app); 34 (map); Plate IIc (tandem)

*Telebasis willinki* Fraser, 1948: 54 (holotype ♂, allotype ♀, Argentina, Santa Fé Province, Vera Depto., Villa Guillermina and Tartagal, iv 1946, leg. K.J. Hayward, A. Willink, in IFML).

## Specimens examined

Brazil, Minas Gerais State: 2 ♂, Machacalis, 15 xii 1954, leg. ABMM (RWG); São Paulo State (all RWG): 1 ♂, Rio Claro, Sitio Primavera, 18 ii 1996, leg. FAL; 1 ♂, same but 22 ii 1998; 1 ♂, same data but 31 xii 1997; 1 ♂, same data but 04 i 1998; Rio Grande do Sul State: 1 ♂, 1 ♀, Chácara Nossa Senhora das Graças [Nowadays Instituto de Educação Marista Nossa Senhora das Graças], Viamao municipality, 05 iii 2005, leg. A. Pinto, J.G. Silva; 2 ♂, same but 29 i 2006 (MNRJ). Bolivia, El Beni Department: 1 ♂, Reyes, 02-20 xii 1956, leg. L. Peña (RWG); 7 ♂, 1 ♀, roadside pool, San Ramon-Trinidad road (13°21'41"S, 64°41'00" W), 04 xii 2003, leg. C. Hamel & D. Mann (CBF); 1 ♂, same but near San Pablo, in forest (15°14'26"S, 63°52'20" W), 06 xii 2003 (OUMNH); 1 ♂, same but (DCP); Santa Cruz Department (all RWG): 1 ♂, Ñuflo de Chavez Province, pond nr. Río San Julián, 5 km S of San Ramón, 14 xi 1998, leg. KJT; 1 ♂, Los Lajas hacienda and lagunas, Guarayos, 27 viii 2003, leg. JJD. Argentina (all NVE; RWG), Buenos Aires Province: 2 ♂, 10 km N, Zarate toll bridge, 11 xii 1979, leg. C.M., O.S. Flint Jr.; 1 ♂, 1 ♀, Punta Lara, Boca Cerrada, 22 ii 1989, leg. G. Jurzitza; 2 ♂, 1 ♀, same but 01 ii 1995, leg. RWG, J. Muzón; 1 ♂, same but 20 xi 1996, leg. NVE; 1, same but 09 iv 1997; 1 ♂, same but 21 iv 1997; 1 ♀, Lima, fishing club near Central Nuclear Atucha I, 15 xi 1995; 2 ♂, same but 23 iii 1995, leg. J. Muzón, NVE; 2 ♂, 2 ♀, Campana, San Fernando, Camping Cielo, 08 i 1999, leg. J. Muzón, NVE; Jujuy Province: 1 ♂, Parque Nacional Calilegua, laguna, 21-22 iii 2006, leg. RWG, NVE; Salta Province: 4 ♂, 1 ♀, Parque Nacional El Rey, pond 4 km SE of Cascada Los Lobitos, 30 x 2006, leg. RWG, NVE; 18 ♂, 2 ♀, San Martín Department, Laguna de las Catas, km 22 junto a ruta de Piquirenda Viejo a Yacimiento Macueta (PAE), 07 xi 2006, leg. RWG, NVE; 2 ♂, Dique El Tunal, 26 iv 2008, leg. NVE; 1 ♂, pond 1 km E of Embarcación, on road to Misión Chaqueña, 23 iv 2008, leg. NVE; Santa Fe Province, 3 ♂, Santo Tomé, Río Salado, 30-31 iii 1971, leg. C.M.,

O.S. Flint Jr.; Formosa Province: 4 ♂, ditch by road, 10 km N of Formosa on route 11, 05 xi 2007, leg. RWG, NVE; 8 ♂, same data but roadside pool on route 2, 200 m N of Mojón de Fierro, 05 xi 2007; 9 ♂, 2 ♀, same but roadside pool on route 2, 3 km S of Mojón de Fierro; 6 ♂, same data but roadside pond and grassy ditches by route 81, 40 km W of Formosa, 06 xi 2007; 15 ♂, 3 ♀, same data but roadside pond by route 81, 48 km W of Formosa; 8 ♂, same data but ponds 12 km S of Gran Guardia on road 16; 8 ♂, same data but slough 2 km S of Bañado La Estrella, 43 km N of Las Lomitas on road 28, 07 xi 2007; 7 ♂, 2 ♀, swamps by route 81, 12 km E of Ingeniero Guillermo N. Juárez; 4 ♂, same but slough 2 km S of Bañado La Estrella, 43 km N of Las Lomitas on road 28; 2 ♂, Parque Nacional Pilcomayo, Laguna Blanca marshes by pond, 16 ii 2008; 1 ♂ same but rain pool by route 28, 22 km N of Las Lomitas, 18 ii 2008.

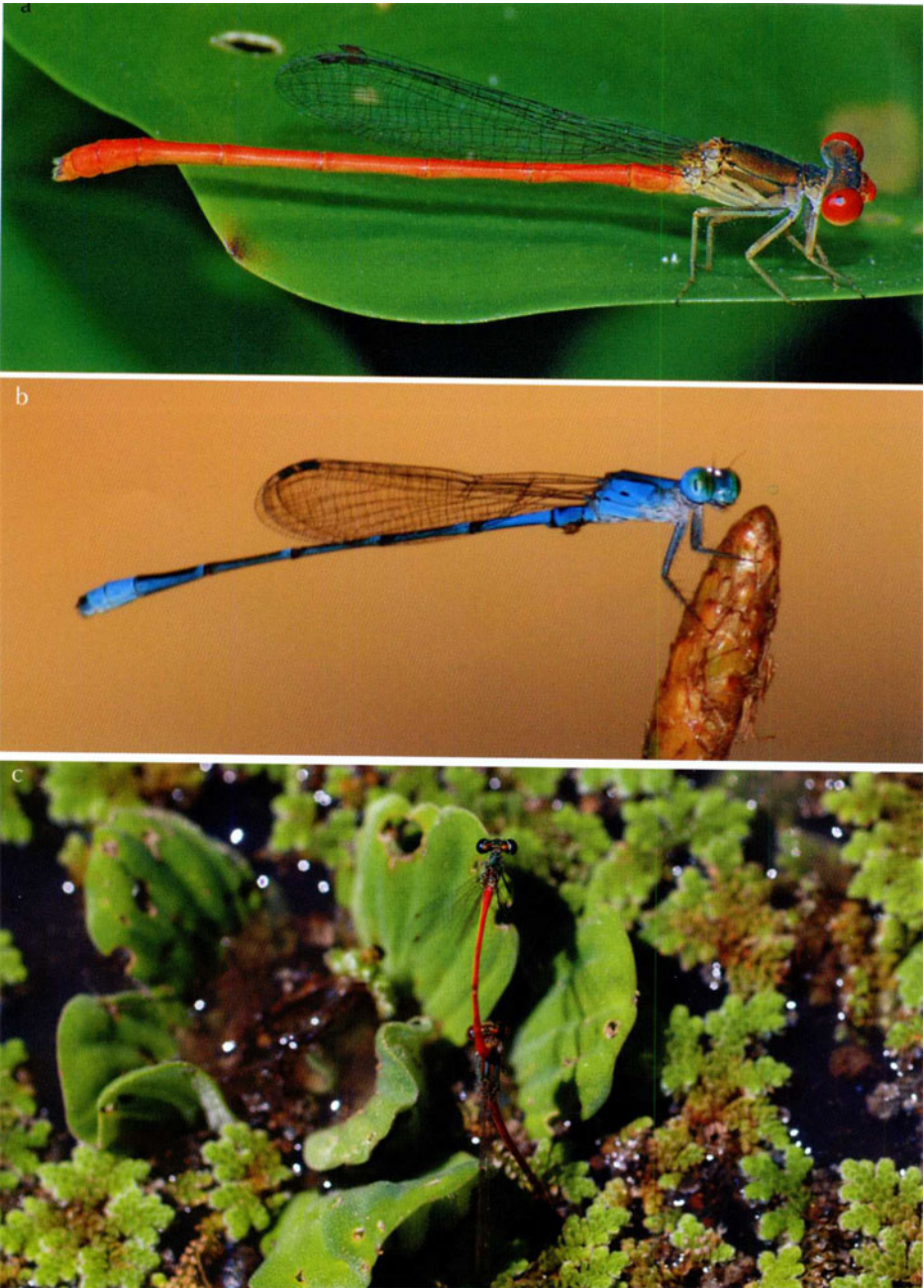


Figure 40: Distribution of *Telebasis carminita* (○) and *T. corallina* (★).



Colour plate I: Males of three *Telebasis* species — *T. corallina* in Salvador, Lauro de Freitas, Bahia State, Brazil, 22 June 2008; (b) *T. griffinii* at pond in National Park Calilegua, Jujuy Province, Argentina, 21 March 2006; (c) *T. inalata* in a population W of the Andes, at a borrow pit pond S of Machala, El Oro Province, Ecuador, 9 April 2008. Photos by Ruy Penalva (a), Natalia von Ellenrieder (b), and Ken Tennessen (c).





Colour plate II: Three *Telebasis* species — (a) *T. levis* sp. nov. in Navojoa, Sonora, Mexico, 29 August 2006; (b) male of *T. vulcanoae* in Salvador, Lauro de Freitas, Bahia State, Brazil, 18 October 2008; (c) ovipositing tandem of *T. willinki* at a pond 4 km W of Cascada Los Lobitos in National Park El Rey, Salta Province, Argentina, 30 October 2006. Photos by Dennis Paulson (a), Ruy Penalva (b), and Natalia von Ellenrieder (c).



Colour plate IIIa: Male of *Trithemis morrisoni* sp. nov. — Bovu Island in Zambesi River, Zambia, 18 February 2006. Photo by Jens Kipping.



Colour plate IIIb: Female of *Trithemis palustris* sp. nov. — Okavango Delta, Third Bridge campsite in Moremi Game Reserve, Botswana (type locality), 1 February 2006. Photo by Jens Kipping.





Colour plate IV: Male of *Trithemis palustris* sp. nov. — Okavango Delta, Third Bridge campsite in Moremi Game Reserve, Botswana (type locality), 31 January 2006. Photo by Jens Kipping.



## Diagnosis

This, the most southerly member of the *T. filiola* group, is closely related to *T. filiola* and *T. inalata* by overall size and coloration; all three are diagnosed under *T. filiola* and under keys M-7 (males) and F-2 (females).

## Remarks

Holotype ♂ (head, thorax, all wings, S1-4) with following labels: “*Telebasis willinki* /Fraser [manuscript blue ink on white paper],” “Typus [type written on red paper],” Santa Fé / Tartagal/Dto. Vera/III-946/Hayward-Willink [manuscript black ink on white paper].” Allotype ♀ (head, thorax, right Fw incomplete, abdomen separated): “*Telebasis willinki*/n. sp. allotype ♀ [manuscript black ink on drawing paper],” “Al-

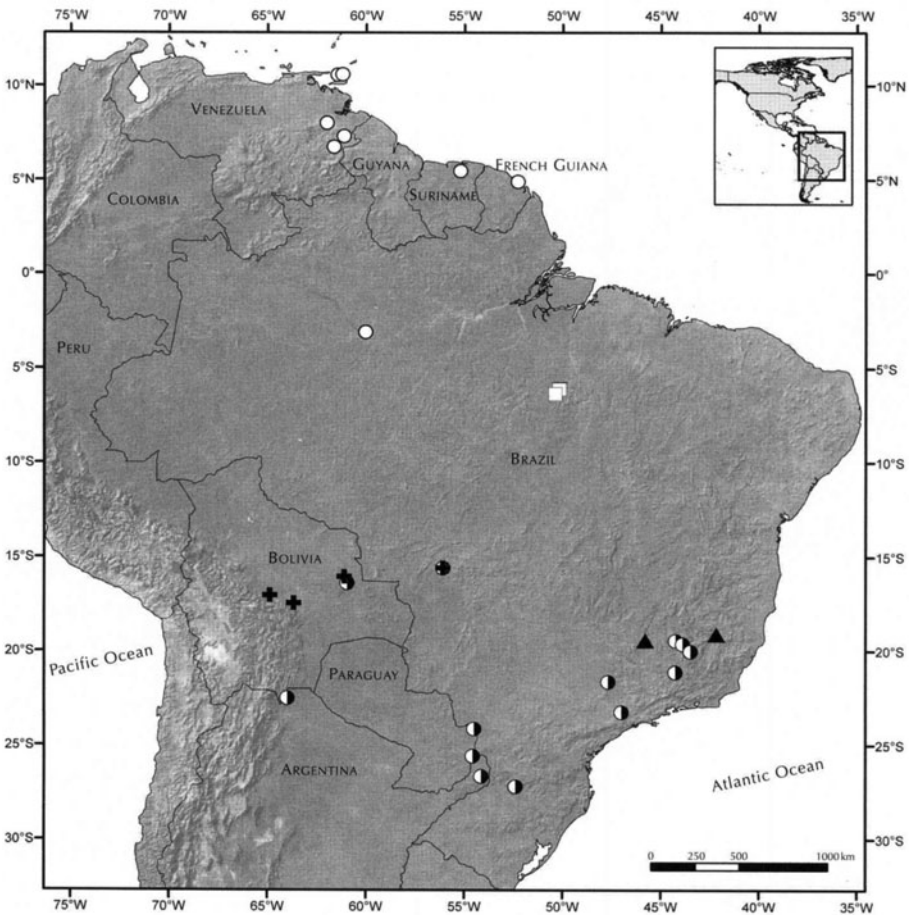


Figure 41: Distribution of *Telebasis carmesina* (●), *T. carvalhoi* (□), *T. paraensei* (▲), *T. simulata* (○), and *T. filiola* (◆).

lotypus [type written on red paper],” “*Telebasis willinki* ♀ / Fraser [manuscript blue ink on white paper],” “Tartagal Dep. Vera Santa Fé/26 Febr.-4 Marzo 1948/Hayward y Willink [type written on white paper].” NVE kindly compared these specimens with illustrations I made of a female and confirmed my concept of this species.

Bick & Bick (1995: 41) state that *T. willinki* is “...recorded only from Argentina...,” but it occurs much further north into Bolivia, Paraguay, and SE Brazil. As stated under account for *T. filiola*, the characters listed by Bick & Bick will not work in separating among males of *T. filiola*, *T. inalata*, and *T. willinki*.

### Distribution

Abundant in N Argentina, *T. willinki* extends northward to Bolivia and east to SE Brazil (Fig. 34). It is sympatric with *T. inalata* in S Bolivia and NW Argentina and will likely be found in Paraguay. Both species have been collected at the same time and place in Bolivia (Santa Cruz Department, Los Lajas hacienda and lagunas, Guarayos) and NW Argentina (Jujuy Province, Calilegua, laguna).

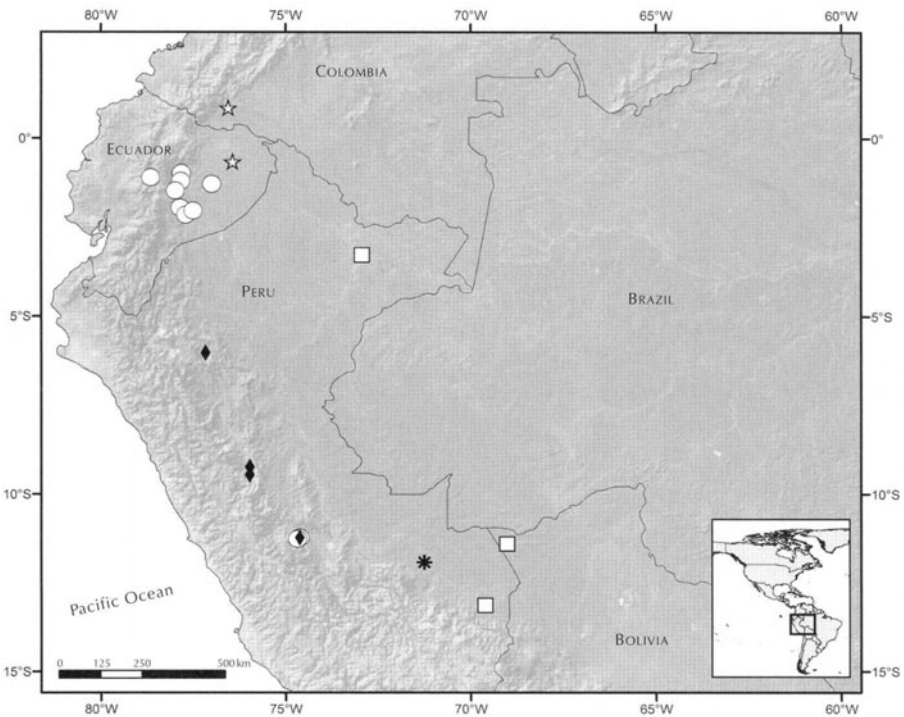


Figure 42: Distribution of *Telebasis carota* (○), *T. corbeti* (□), *T. milleri* (\*), *T. versicolor* (☆), and *T. watsoni* (◆).

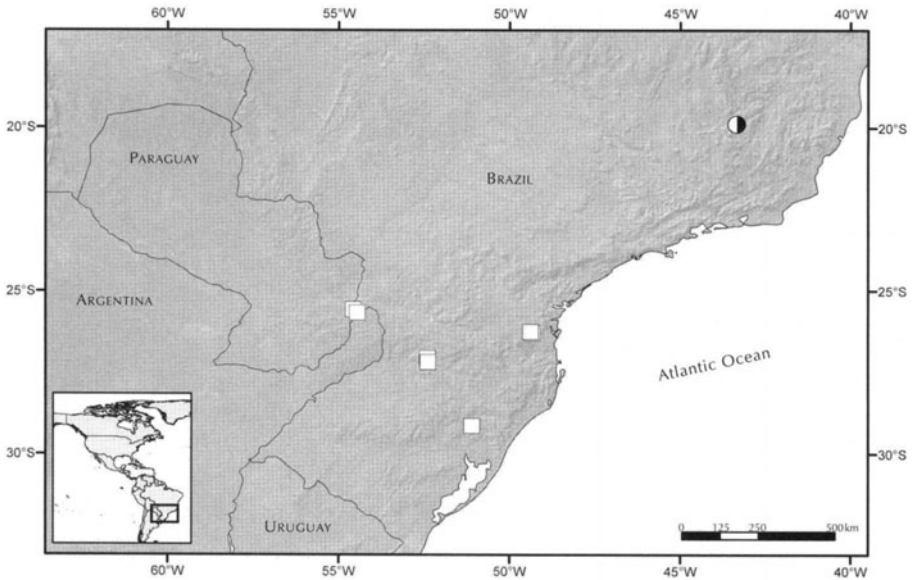


Figure 43: Distribution of *Telebasis erythrina* (●) and *T. theodori* (□).

### Biology

NVE and I collected *T. willinki* at small to large ponds across Formosa Province in Argentina. They flew rapidly, landing horizontally on mats of *Azolla* in sunshine much as described for *T. filiola* above. Females were much less in evidence than males. Muzón et al. (1990) provided quantitative population dynamics of a larval population at Punta Lara, Buenos Aires Province, Argentina. Ângelo Pinto collected adults in Rio Grande do Sul State, Brazil at a pond with abundant *Eichhornia crassipes* (pers. comm.).

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